THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 10 NOVEMBER, 1928 No. 8

Power, Heat, Light and Paper

A Review of Recent Progress in Modern Power Plant Practice

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THE Paper and Pulp Industry, in respect of demand for power, heat and light, occupies a unique position among other industries. It consumes annually some 9,500,000 tons of coal and over 200,000,000 gallons of fuel oil and, in addition, about 12,000,000 cu. ft. of gas.

It generates, to meet its requirements, over 4,600,000,000 kw. hrs. of energy and purchases the balance of 1,265,000,000 kw. hrs. from outside sources and yet more than half of the amount of steam generated is consumed outside of the power house as heating medium in processes.

In spite of such magnitude of steam demand, 36 per cent of boilers are of the old fire tube design and 1,030 boilers, or 40 per cent, were installed prior to 1916!

Outworn Methods of Steam Generation

These figures[1] represent indeed the strongest impartial indictment in backwardness of an industry with over 3,000,000 primary horsepower. Yet this is by no means due to adverse condition of industrial growth, for as a matter of fact, the production of chemical and mechanical pulp has increased 60 per cent since 1914 average production of 236,000 short tons per month, to 379,000 tons in May, 1928.[2]

What do these figures tell if they tell anything?

The meaning of these statistics is **inefficiency** on one of the principal items of expense. It is plainly spelled out in the large number of antiquated equipment; it is equally plainly spelled out in traditional, outworn methods of power generation, distribution and utilization. Perhaps the fact that only little over 20 per cent of power can be used in industry from outside source (because of need for process steam), offers little inducement to compete with higher efficiencies of modern central stations of public utility companies.

Whatever the reasons, the last few years have witnessed notable inroads into the old tradition of leaving the power house well alone and writing into records of industry some outstanding work in the direction of modernizing the pulp and paper mill's power plant.

How to Modernize the Power Plant

There are, of course, two ways of securing a higher efficiency from a power plant:

1—To use whatever equipment there is available to best advantage, and

2—To install the most up-to-date improved equipment.

The wise management combines both. The advantages secured through scientific and economical operation of an existing plant help toward eventual modernization of equipment. The short-sighted one sinks the capital into a new plant, but forgetting the human element, fails to realize the full value of the investment.

What is true in general, is also true in individual cases, and the introduction of principles of scientific management in the paper mills' power plants has already its record.

The first step in this direction was made by the Strathmore Paper Company, under the direction of the writer and was reported at the spring meeting of T.A.P.P.I. in 1918[3] and later in the publication of News Print Service Bureau[4].

The thermo-economic result of this method was seen in an increase of efficiency from not over 68 per cent to 73-75 per cent, which has since been well maintained, as well as in securing good will of

[1]Compiled from "Power" Inventory Data.
[2]U. S. Dept. of Commerce, Survey of Current Business, August, 1928.
[3]Dayton, O., May 16, 1918, Paper, vol. XXII, no. 11.
[4]Meeting of Cost Accountants and Engineers, New York, October 19, 1926.

employees, better service, and such other incidental advantages and economies, which made the executives of the company declare that the "results have fully justified the expenditures."

Case of Managerial Betterment

A more recent case of managerial betterment is typified by The Champion Fibre Company, where

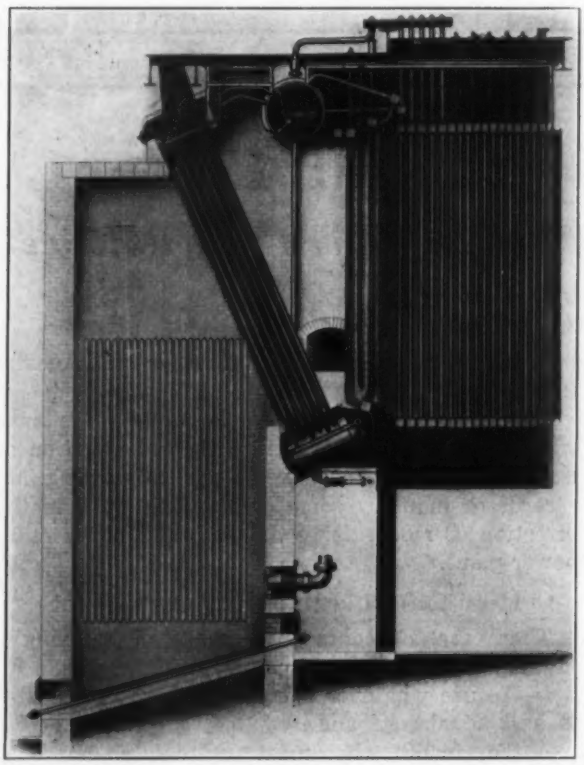


Fig. 1—Edge Moor single-pass high pressure steam boiler, 8150 sq. ft. heating surface, with water cooled furnace for pulverized fuel, volume 6200 cu. ft.

the staff, by following the recommendations made in my report of 1925, effected an economy of $34,984 in the following year through an increase of evaporation in one of their boiler houses. It is significant that in the report a possible saving of $35,000 a year was estimated. It is still more instructive to observe that during the identical period, one of the plants of the same company, where the steps advised were not taken, dropped evaporative efficiency from 70 per cent to 66 per cent, while the one where better methods had been introduced showed an improvement of 64 per cent to 72 per cent.

On the border line between the betterment of method by scientific management and physical betterment by new installations lies a fertile zone and the firm of McEwan Brothers, Inc., Whippany, N. J., is on record as effecting a saving of $28,000 annually through various minor ameliorations of furnace, stokers, etc.

But it is an ill wind that blows nobody good, and the fact that the pulp and paper industry has such a large share of antiquated power equipment and operates at such a very low efficiency as compared with younger and more progressive industries, makes it now even more attractive to scrap the dilapidated power plant equipment and replace it with up-to-date, efficient equipment or at least supplement the old plant with special new extensions.

In this respect, the boiler house is obviously the more promising place. Recent improvements in high pressure steam boilers, advantages of high superheat, economies incident to the burning of pulverized coal and last, but not least, unique advantages for many paper mills offered by the use of steam accumulators are among the foremost possibilities for earning handsome dividends on investment.

New High Steam Pressures

Steam pressures from 500 to 750 lb. per sq. in. and superheat around 250° F., seem to be best adapted for paper mill plants for many reasons. For such service, progressive paper and pulp mills select usually vertical or inclined water tube type boilers, such as Sterling, Bigelow-Hornsby, Single-pass Edge Moor, or V-type Heine, which apparently indicate the modern trend away from horizontal water tube boilers. (Fig. 1)

Recent Installations

Efficiencies of such installations depend largely upon the design of furnaces and wise selection of stokers, coal pulverizers, burners, etc. A good example of results secured by Hollingsworth & Vose Co., at West Groton, Mass., with Sterling boiler and Riley zoned superstoker is worth noting:

During a 24 hour test, carrying steam pressure of 147 lb. and 95° F. superheat, the unit developed 157 per cent of rated capacity of 500 h.p. The equivalent evaporation per 1 lb. dry coal was 12.6 lbs., i.e., the efficiency of boiler, furnace and stoker was 83 per cent. Test was run June 27-28, 1928. Since then monthly average efficiency is recorded between 76 and 77 per cent.

At the Fitchburg Paper Company's plant, a 1,000 h.p. Bigelow-Hornsby boiler is installed to operate at 250 lb. per sq. in. pressure. It is provided with Ljungstrom air preheater and Riley Atrita coal pulverizers and low pressure burners. The specified efficiency of this installation is over 85 per cent and the plant was put into operation in April, 1927.

Among the most recent installations, a Maryland plant of the West Virginia Pulp & Paper Co. has pulverized coal installation under six Edge Moor boilers, showing an efficiency of about 78 per cent nearly doubled steaming capacity.

A case of replacement of stokers by pulverized fuel as at Taggart Bros. Co., Watertown, N. Y.,

shows similarly an increase of efficiency, and even under the old horizontal return tubular boilers in the S. D. Warren plant, this type of Atrita coal pulverizers and burners worked apparently very satisfactory. (Figs. 2 and 3)

Introduction of Steam Accumulators

Everyone familiar with the intermittent steam demands for digesters realizes the difficulties of maintaining uniform steam pressure, and of operating boilers economically with highly fluctuating loads. To improve this condition, a well established European practice of many years' standing is beginning to make inroads into American practice as well, in the form of installation of steam accumulators. The principle of steam accumulator is based on the characteristic of large quantities of water at such critical temperature and under pressure to release the heat energy in the form of steam whenever the pressure begins to drop. Because of numerous advantages obtained by the installation of steam accumulators, a 10 to 15 per cent saving in steam is on record.

In both sulphate and soda digester practice the Ruths Steam Accumulator equalizes the demand for steam to an extent that makes it possible to operate one particular plant with three boilers instead of the four previously necessary. The steam pressure was maintained uniformly, and therefore good speed regulation on paper machines which prevents many a breakage of paper. Such representative installations as Algonquin Paper Corporation, Bogalusa Paper Company, International Paper Company, Manitoba Paper Company, and others, appear as pioneers in this new practice. A diagram, Fig. 4, represents a typical arrangement of steam accumulator in a unique case where Kalen Electric

Fig. 3—Typical installation of unit pulverizers applied to 830 horsepower Connolly boilers, carrying 300 per cent rating on peaks

Boilers, as manufactured by Dominion Engineering Company, Montreal, are used as steam generators, while Diagram 5 represents a hook up in a high pressure, high superheat installation, and Diagram 6 illustrates typical alternations in charging and discharging the accumulator through a twenty-four hour period. (Fig. 7)

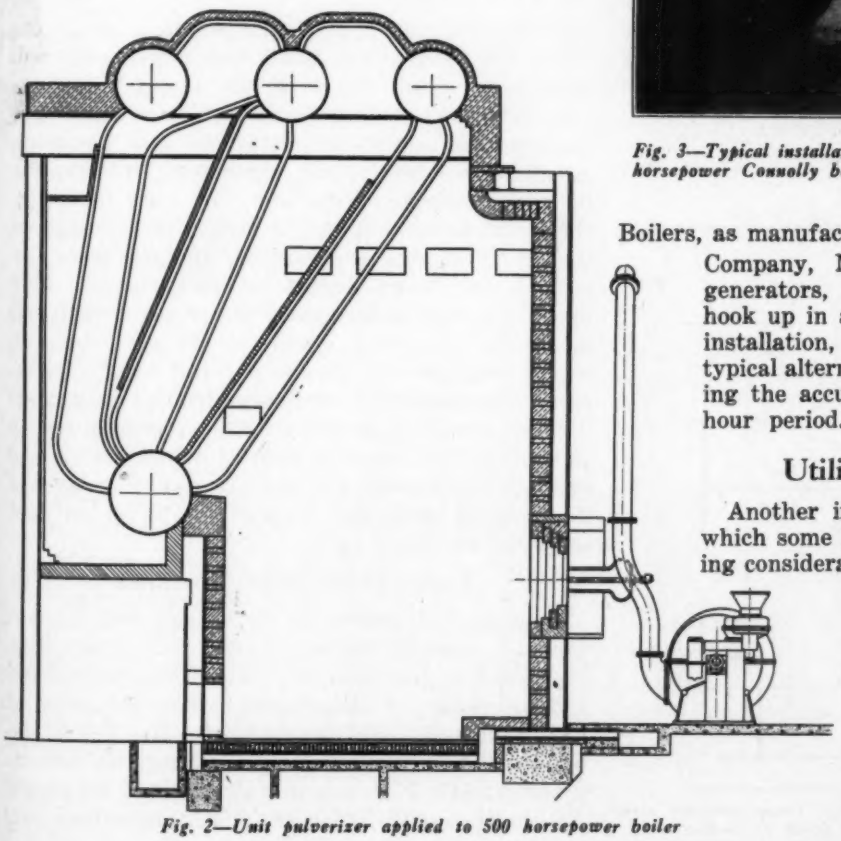


Fig. 2—Unit pulverizer applied to 500 horsepower boiler

Utilization of Waste Heat

Another important point in the plant at which some leading papermakers are securing considerable economies, is the utilization of waste heat, such as from black ash incinerators and efficient use of hog fuel. The new type of waste heat steam generator, having 5/8" O.D. water tubes, 25' long, of La Mont patent, have already demonstrated advantages of novel principles involved in the gas indus-

try, and bids fair to offer valuable service to the paper industry. The efficient use of bark, waste wood, sawdust, and other wood refuse and hog wood

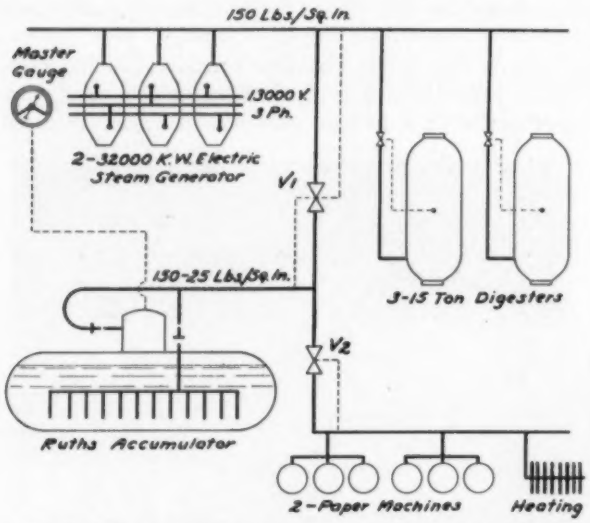


Fig. 4—Steam accumulator in connection with electric boilers

for a long time has been considered rather a process of refuse incineration, than efficient steam making. Latest designs of special furnaces maintaining high temperature for ignition of high moisture fuel change the practice radically, and wherever fuel oil is not economically available, the associated installation of small unit pulverizers opens new channels for economies. Longview Fibre Company, Champion Fibre, and others have made notable steps in this direction.

High Pressure Turbines

Passing now from steam generation to its uses

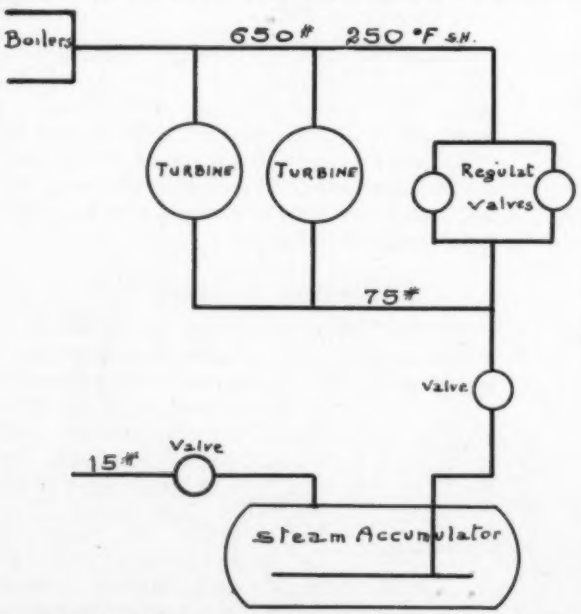


Fig. 5—Typical pipe connection in a high steam pressure plant of a paper mill in connection with steam accumulator

throughout the mill, the notable trend in the paper mill plants being toward increase of steam pressure and temperatures, has led to the adoption of high pressure exhaust turbines. In this respect there are two distinct situations to be met, depending on local conditions: either to use exhaust steam directly for processes, or, as in a more recent project worked out by us for The Champion Fibre Company, to operate with the exhaust steam from the new turbine the entire existing power house. Depending upon the requirements for the exhaust steam, the back pressure is either moderately low, that is, from 25 to 75 lb., or else, as in the latter case, as high as 175 lb. The advantages of such exhaust turbine

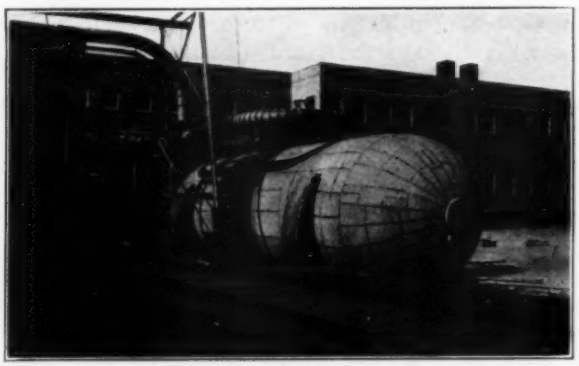


Fig. 7—40,000 lb. steam accumulator installed in sulphite pulp plant for steam 150 lb. pressure, 25 lb. minimum

superimposed over the existing power plant are obvious, for not only is additional power obtained, eliminating costly and uncertain supply from outside, but the existing equipment, pipe lines and engines need not to be disturbed, thus obviating considerable expense, and eliminating interruption in service during alterations. In such instances, the steam exhaust from the high pressure exhaust turbines is highly superheated, and therefore unsuitable for all equipment not so designed. This involves a new departure in power plant improvements by installing either steam accumulators, which would be indicated in cases of highly fluctuating steam demand, or desuperheaters of various designs, which incidentally act as regenerators by converting the excess superheat taken out of the exhaust into additional volume of steam at say 175 lb. pressure, which may vary from 8 to 12 per cent added steam flow.

Types of Exhaust Turbines

Diagram 8 visualizes the various types of exhaust turbines, namely, Allis-Chalmers, with steam supply at 375 lb. pressure, 725° total temperature, and 125 lb. exhaust; Westinghouse turbine for steam at 350 lb. pressure, 700° temperature, and 125 lb. exhaust; and General Electric for steam at 400 lb. pressure, 645° F. exhausting against 125 lb. gauge. All turbines with 2,000 kw. A. C. generators, and

the selection would be governed by the amount of exhaust steam per hour required, varying, as in the case, from 194,000 to 221,000 per max. hour. Figure 9 represents a photo of a typical installation of such modern exhaust turbo-alternator.

Relatively little progress can be recorded in the important field of steam distribution and utilization throughout the mill. The old habit formed in the days of low pressure wet steam still haunts the minds of many a papermaker who is not happy unless he has full pressure, and valve wide open on whatever apparatus he handles.

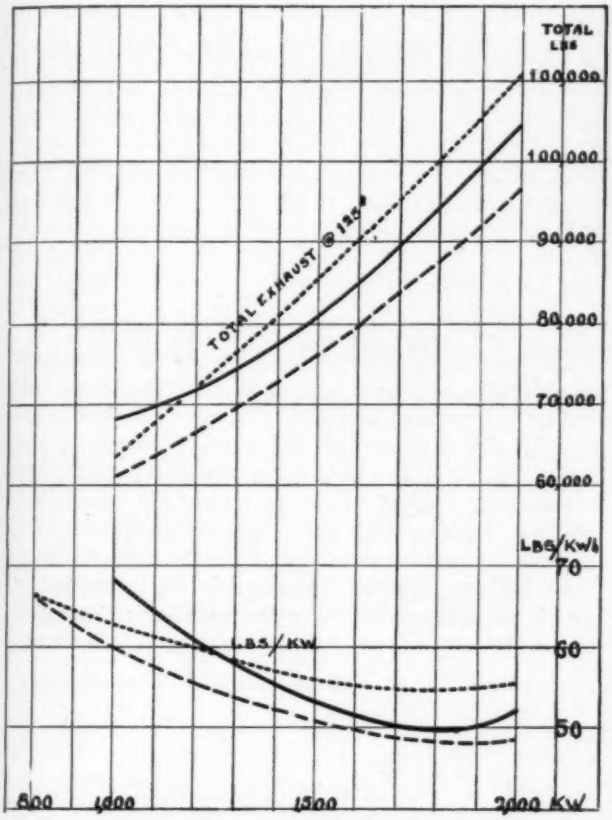


Fig. 8—Water rates and total quantity of exhaust available from three different makes of high pressure exhaust steam turbines, with 2000 kw. generators

Fig. 9—Typical installation of a high pressure, high superheat, exhaust turbo-alternator built by General Electric Company

Allocation of Power Expenses

On the other hand, crude accounting methods, neglecting correct allocation of power expenses to various processes, did not look with favor on accurate metering of steam consumed by various departments. However, following the lead of the textile finishing mills[5], the pulp and paper industry begins to avail itself of this promising, rich field for operating economies and greater uniformity of

[5] "Allocating Power Cost to Product", W. N. Polakov, Management & Administration, May and June, 1925—Also "Steam Loss Prevention" by H. M. Burke, A.S.M.E., describing our method of steam despatching.

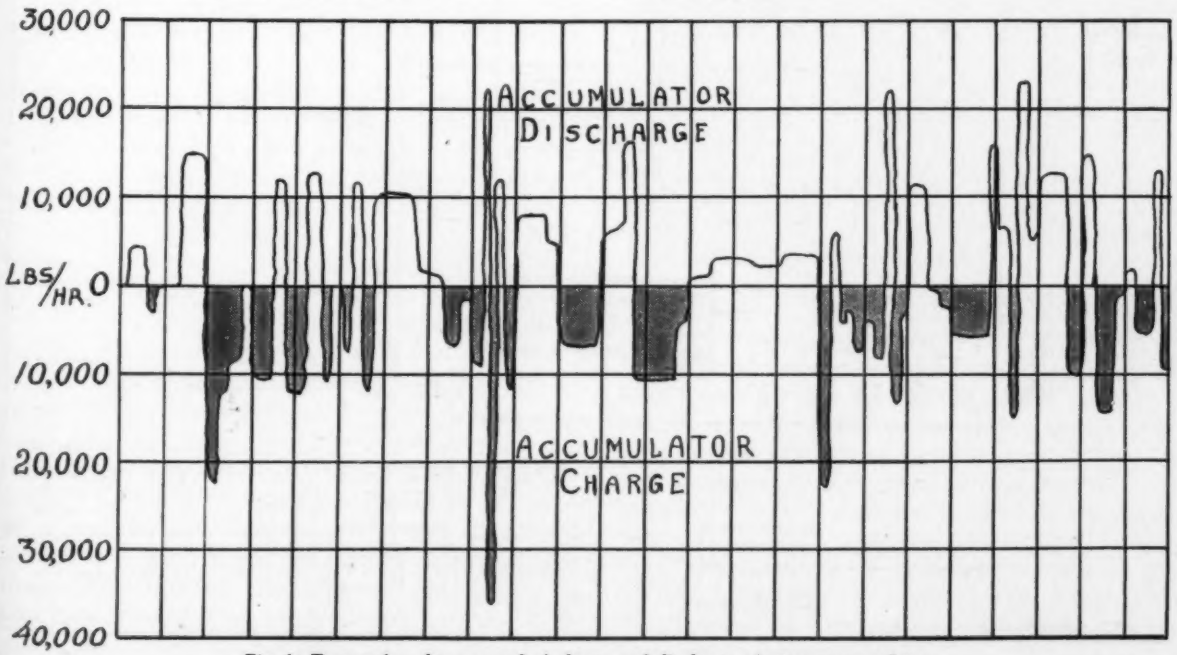


Fig. 6—Twenty-four hour record of charge and discharge of steam accumulator

product. Since the advent of modern improvement in electric remote steam flow recording, the use of steam of various pressures and temperatures is being put now on definite budget in greatly reduced

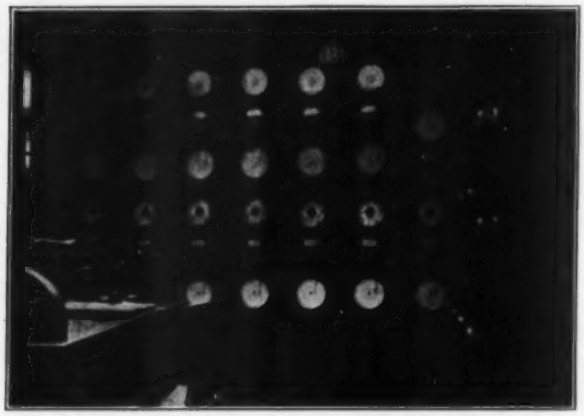


Fig. 10—Steam dispatcher's office, illustrating central location of 30 indicating, intergrating and recording electric Republic steam flow meters

quantities, and the centralized control is exercised by a steam and power despatcher, having continuous information in front of him as to what is going on at each steam consuming place throughout the mill, co-operating with foremen, and advising the power plant as to expected variations in demand by the telephone from his desk. A photo, Fig. 10, pictures such an installation, which, in one particular case, claims $37,120 saving in the first year after the installation, while our work was still in progress.

Tying Up Old Engines with New Boilers

A typical case of modern extension in the pulp and paper mill is illustrated on a schematic diagram, Fig. 11. This shows the addition of new high pressure boilers, high pressure turbine exhausting into engines in present power house, as well as steam meter layout, as projected and specified by us, and is a fair example of present tendencies in paper mill betterment.

The Terry Steam Turbine Drive

The paper machine drive has likewise received considerable attention within recent years, and following the success attained in some installations of individual electric motor drives sectionalized on the paper machine, the steam turbine drive has been successfully applied to secure accurately controlled, uniform speeds, with consequent high production, elimination of breakdowns, and uniform product. Such turbine drive of paper machines is controlled by oil governor, allowing wide variation of variable speed, instead of cumbersome mechanical contrap-

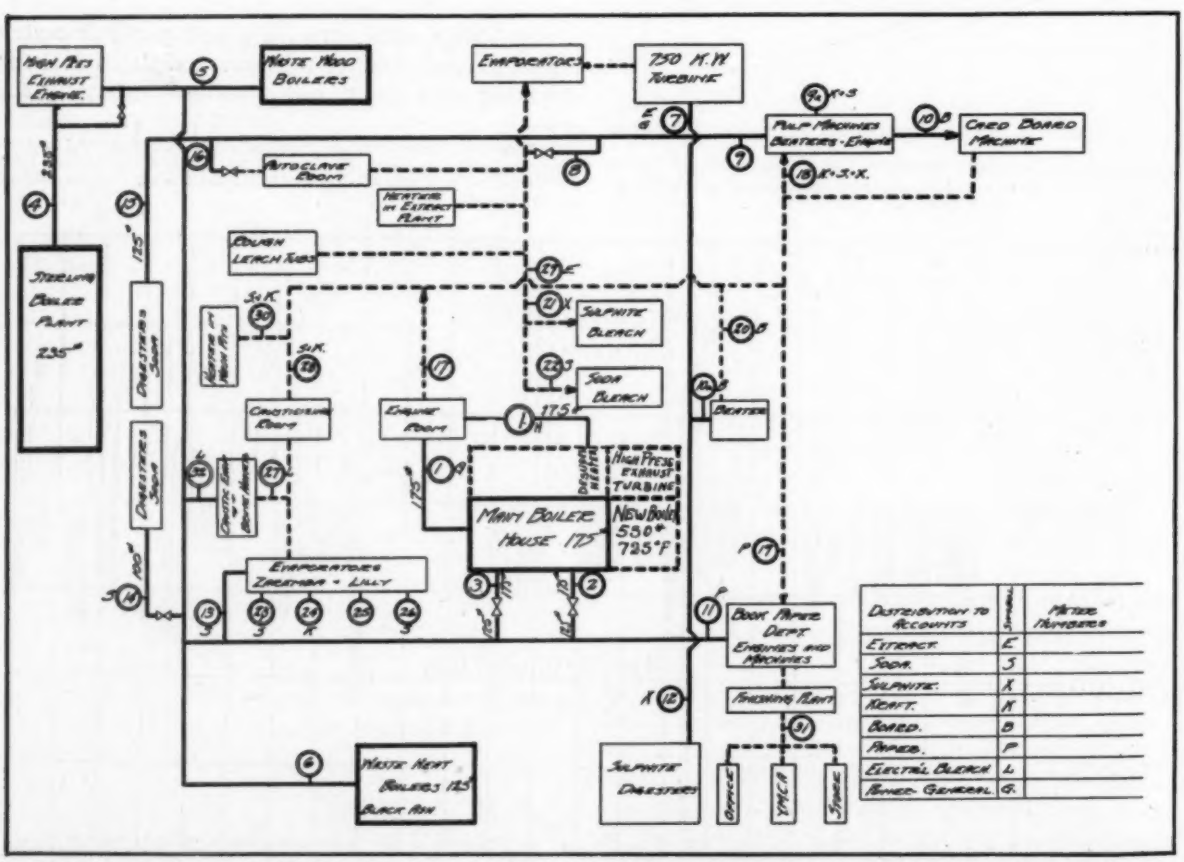
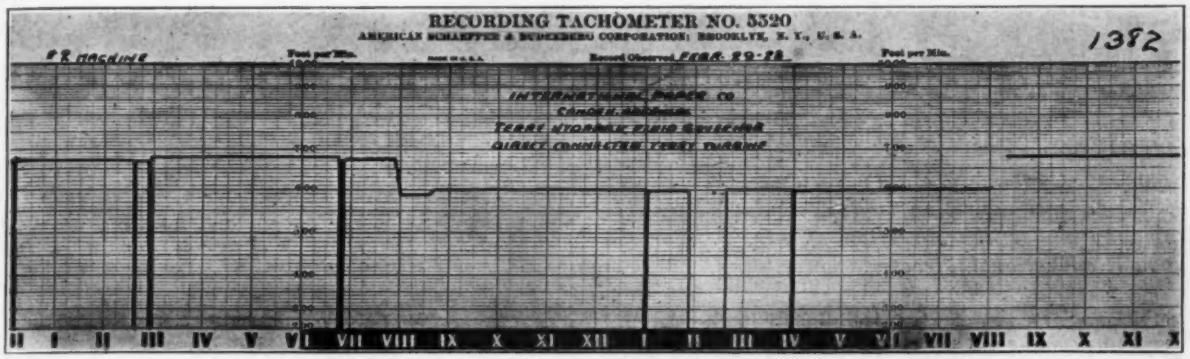


Fig. 11—Schematic layout of additional high pressure boiler, turbine, desuperheater, pipe and meter layout in a large fiber company

tions for speed change. Moreover, it offers remote control with one or more stations. The operation of this new Terry Steam Turbine Company's variable speed fluid governor was reported as highly successful on paper machine drives, and the speed chart reproduced in Fig. 12 fairly tells the story.


RECORDING TACHOMETER NO. 5320
AMERICAN SCHAEFFER & BUDENBERG CORPORATION; BROOKLYN, N. Y., U. S. A.
1382
Feet per Min.
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Feet per Min.
INTERNATIONAL PAPER CO
TERRY HYDRAULIC FLUID GOVERNOR
DIRECT CONNECTED TERRY TURBINE
II I II III IV V VI VII VIII IX X XI XII I II III IV V VI VII VIII IX X XI X

Fig. 12—Actual record of accurate speedy control on a paper machine operated by Terry Steam turbine and regulated by hydraulic fluid governor.

Developments in Paper Mill Illumination

The latest development in paper mill illumination is of course of tremendous importance, for the United States Weather Bureau records in northwestern papermaking districts but 136 days per year of unobstructed daylight. Similarly, in the mills of twenty-four hour operation, no amount of window daylight is of any avail. Yet, to say nothing of laboratories, in the beater room, on paper machines, in sizing operations, in color matching, and of course in inspection, the source of illumination is of great importance for the detection of any imperfections as to surface, color, streaks, etc. The new method of daylighting paper mills with an artificial light with spectral quality identical with summer daylight, the light which is widely diffused, colorless and economical was recently offered to the trade under the name of Sunlike, of which recently representative installations have been made at Howard Smith Paper Mills, Ontario, Eaton, Crane & Pike, West Virginia Pulp & Paper Company, and others. The proper light, of course, is of particular importance to the allied trade, such as the printing industry, where buyers examine the stock and carefully shade book pages, etc., and where the same Sunlike seems to offer important aid in such establishments as Schweinler Press, J. J. Little & Ives, Conde Nast, News Print Service Bureau, etc. (Fig. 13)

While the foregoing outlines progress and opportunities presented within recent years to the paper mills to secure operating economies through a closer attention to their power, heat, and light problems, this review does not pretend to be complete or exhaustive, though it clearly indicates both great opportunities that are present and a bewildering variety of courses to choose for the desired end.

Need of Expert Operators

It is penny-wise and pound-foolish, however, to invest money in such physical plant improvements and trust its operation to men trained in the old school. An endless number of sad examples might be cited, which we desist from doing, where the installation performing its guaranteed economy on acceptance tests proved way below the expectations in day-in and day-out service. A drop of efficiency from 83 per cent as an official test to 75 per cent

Fig. 13—Close scrutiny of whiteness of paper and color match to samples in a high grade printing establishment under Sunlike illuminating unit, diffusing actinic white light of 4575° K.

in daily use means in the plant using annually 12,000 tons of coal not merely $4,300 annual loss, but, stated differently, means an idle investment of over $70,000 earning no dividend.

To supplement any physical betterment or new installation by a program of thorough standardization of operating methods, training employees in the habits of industry and introduction of other managerial means of incentive and control under the direction of a competent consultant, appear to be a very real necessity.

Lessons in Paper Making

Lesson XXIII—Beater Room Preparation (Part 2)

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

This artictle is the twenty-third of a series of lessons in practical paper making, appearing in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course, conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

IN LESSON twenty-two, published in the August 1928 issue of THE PAPER INDUSTRY, we discussed in part the gains derived by passing the stock with the water through the rotary pump and thence directly to the feed trough leading to the screens. We also ventured an **opinion** as to the probable cause of these gains.

Before piping up the system for this particular type of delivery, it is equally important to study the possible disadvantages which may occur.

Briefly, the system under discussion is to use a single jordan as a finishing jordan, the stock being pumped from the machine chest to a supply box, thence to the finishing jordan, directly to the inlet pipe of the white water pump and from this point, the mixed volume to the screen supply trough. The most obvious advantage is the **immediate** control over the stock in relation to the "freeness or slowness" for quick action on the machine. By using this system, a change of treatment on the finishing jordan is effective almost instantly.

The other system, and it is the one most commonly used in "fine mills", is to deliver the stock and water separately to the screen supply trough and effect the mixing of these primary components in paper making in the distance of flow available before the screen inlet pipes are reached. In this latter system, any change of hydration developed by the jordans must permeate the major portion of the volume of stock held in the machine chest before its effect is registered on the machine wire. Such a change is therefore slow and gradual in effect.

On certain papers of high quality, this **gradual** change is preferable; on the more common papers, where production and speed are the orders of the day, the quick effect on the machine wire is to be preferred.

The importance of effecting an adequate **mixing** of fiber and water **before** presenting the mixture to the slice is gaining more recognition every day. Head box design, **circulating** devices, compression and expansion areas, all aiming at this important factor, **"To separate and keep the fibers in suspension in water until the actual moment of delivery from the slice lip to the wire."**

Wherever it is at all possible, it is therefore a definite **gain** to **mix the stock with the water which has to suspend it at the earliest possible moment.**

Basis Weight Control

If we are going to pipe our system to use the last jordan as a finishing jordan, we must first decide **where we will control the basis weight—before** the stock passes through the jordan, or **after** the stock has passed through the jordan.

If we adopt the former method, **then the total volume of stock passing through the jordan can not be greater than the volume required for the basis weight being made.**

Herein then is the question of **flexibility of control.** The jordan plug has to act in the capacity of a pump and **throw** the stock to the inlet pipe of the white water pump. To do this effectively, the plug must have a constant **uniform grip** on the stock. If the production per hour of the machine is low, perhaps a special grade of paper on which it is not advisable to push for high production, then the volume of stock supplied to the jordan from the basis weight control gate is also low. Under these circumstances, we may find it necessary to set up the jordan plug, **not** for **jordaning effect** but for **uniform pump throw action.**

Consistency of Stock

As we know, the **consistency** of stock in jordaning is a vital factor. Jordans are usually set behind the screens or in the beater room. The white water pump is usually set underneath the center of the back side of the fourdrinier, in either case a fairly long line of pipe is necessary to reach from the jordan outlet to the water pump inlet.

Now, stock of **heavy consistency** does not flow easily through pipes, and it may be found necessary to dilute the stock to a **thin** consistency, **not** for jordaning effect but merely to accellerate flow through pipes. If this dilution is effected **after** jordaning, by tapping a water line into the jordan **outlet** pipe, the development of the stock is not affected. We must not make the mistake, however, of diluting the stock **before** jordaning merely to accellerate pipe flow.

Again, changing the basis weight directly on the jordan **inlet** means a lesser or greater volume of stock going to the jordan. Assuming the jordan

plug to be left in the **same** position, this action of itself automatically changes the jordaning **effect.** A lesser volume of stock between the plug and shell bars means a lighter **cushion** with a greater **cutting** action and a lesser development of hydration. A greater volume of stock between the plug and shell bars means a **heavier cushion** with a greater development of hydration and a lesser cutting action.

We may of course argue that a change of one pound folio basis weight is not very much stock. This is perfectly true, yet the gearing of the jordan plug adjustment is especially designed to give a very **close control;** why rob ourselves of this designed efficiency? **Flexible control** is an efficient tool for the use of the **skilled, accurate workman.**

Control of Power Supply

The question of the **steadiness** of the power supply must also be taken into consideration before deciding the point of basis weight control. If the basis weight is controlled **before** the last jordaning, then any fluctuation in the revolutions per minute of this particular jordan **must** mean a similar variation in basis weight. This is a very important point, and in a wide experience this writer has yet to find the paper mill with a large surplus of available power.

Even should the power be adequate, it is entirely possible that the same line which supplies the power to the finishing jordan also supplies power to other units which are not kept in constant operation under full load. The stopping and starting of these units will of course affect the load on the power line with a subsequent variation of the **voltage pressure** applied to the finishing jordan.

This in effect means a variation in the volume of stock thrown **from** the jordan, and as this volume represents the basis weight, then a fluctuation of basis weight must occur. Variation in speed of jordan plug revolution is almost as vital in effect as variation in consistency of stock. For a **uniform** sheet, we need **absolute control** of these factors.

Air Pockets

There is one other important factor we must consider before deciding the point of basis weight control. That is the question of air or steam pockets forming in the inlet pipe **to** the finishing jordan or in the jordan itself.

There is not much danger of air pockets forming in the inlet pipe if this pipe sets vertically over the jordan. Yet it is not always possible to make this arrangement, and as the dimensions of the pipe must be large enough to accommodate the highest possible production per hour without undue pipe friction, then when the lowest production is in operation there is plenty of air space in the inlet pipe.

By closing the outlet valve from the jordan a few turns, the inlet pipe could be kept filled and a constant head of stock pressure maintained against the stock gate. This action, however, would **again** rob us of flexible control of jordaning **effect** in **relation** to stock development. We most certainly do not desire a "plug cock" action on many grades of paper.

These are the principal factors we must consider when deciding where to place the point of basis weight control if the last jordan is to be used to deliver the stock to mix with the water in the rotary pump.

Advantages and Disadvantages Weighed

Advantages and disadvantages should be weighed thoroughly **before** going to the expense of making changes which may not work under operating conditions. It is certainly true the **better mixing** of stock and water is a desirable gain. It is equally true that variation in basis weight and loss of flexible jordan control in relation to the finer development of the stock, is **not** desirable.

Consistency of stock, variation in revolutions of jordan plug per minute causing variation of supply, and air pockets in the inlet pipe and jordan giving the same trouble, in order to obtain the advantages without incurring the disadvantages, **we must instal the control of basis weight at a point after the finishing jordan has completed its job.**

With a constant head of stock to draw from, minor variations will not affect the basis weight so much. We can do this by installing a supply box over the white water pump inlet. **To** this supply box, the finishing jordan will throw the stock. The volume desired for the basis weight made can be fed into the white water pump, the overflow running back to the machine chest.

In Lesson XXII, we questioned the exact truth of the slogan "Your paper is **made** in the beaters", and in these modern days we must associate jordans with beaters. We granted however that the paper can most certainly be **spoiled** in the beaters.

Paper making is **not a departmental proposition,** it is an **inter-departmental proposition.** The closest flexible control of **each** department with a view to the development of the desired qualities, phase by phase till the ultimate object is reached, is the only way in which **uniform** quality can be produced economically.

Before changes in equipment are made, therefore, the **effect** of such changes in relation to the treatment which goes before and the treatment which must come after, must be given full consideration. It would be futile, for instance, to install liquid level gauges in a beater chest and then **lose subsequent control of the consistency of the stock during any phase of the jordaning process.**

Usually, the term **co-operation** is used in the human sense. In paper making, there is ample scope to use the same term **and apply it to mechanical units.**

Cost Accounting in the Paper Industry

Part II—Principles of Accounting Control

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THE essentials of any set of figures, be they costs, production reports or statistics of any sort, have been stated as follows:

(1) Simplicity,
(2) Centralized responsibility,
(3) Relativity,
(4) Minimum number of variables.

Let us examine these principles and see just what each implies.

Simplicity

A system of costs, a report on any presentation of figures should be as simple as possible under the conditions. It may well be that it is impossible to get the system very simple if the problem itself is complex, but all unnecessary splitting of hairs should be avoided and every part of the system should be tested; every form and every line on every form carefully scrutinized to see that each fact called for or every compilation made will really bring out something which can be acted on and which is necessary.

There are several reasons for simplicity and cost is not the main one. True the system should be as economical to operate as possible, but no essential fact should be slighted to save a few dollars.

The real reason for simplicity lies in the prime cause of its existence, to bring about executive actions beneficial to the company. The Alexander Hamilton Institute truly says that a report had better never be made if no action is taken as a result of its making. The principal problem of the cost accountant is to sell his product. Unless the management has implicit faith in his statements he will be constantly called upon to "back up" his statements, or they will be ignored. Therefore, in order to be able to "put over" his ideas they must be presented in a manner easy of comprehension.

Consider the situation. The cost accountant becomes convinced that the efficiency of a certain operation is low, although as good as usual practice in his mill. He cannot change things, but reports his findings to the management, who if they are convinced, issue instructions. The management consists of busy executives who have many problems on their hands, of which costs are but a small part. They have little time to study the theory of statistics and must rely largely on what they consider good common sense. From the cost accountant's viewpoint they are uneducated, and it is no reflection on them that they are, they may lack the time to be otherwise. Therefore they cannot grasp a complex system of figuring with fine shades of reasoning, but they are the men who must translate the accountant's conclusions into action. Unfortunately it is not always possible to present a problem very simply and a process of education of the executives is essential, but the less there is of this the better and the simpler the system the more easily understood and the more rapid are results secured.

Simplicity is not always easy or cheap. Quite the contrary! A famous preacher was once told by one of his parishioners that his sermons would be much better if they were shorter. "But", he replied, "I haven't the time to make them short". It does take time and much effort to make a short comprehensive report. It is easy to throw on the president's desk a large mass of raw undigested facts, but to boil them down to a simple report that points out a few pertinent facts that bring results is hard. As a typical example, a certain accountant had to make a report on the use of coal in the steam plant. The first attempt was a report of ten pages and fifteen odd variable to explain. After three weeks hard work and rewriting it about six times it was boiled down to one page and four variables.

The final results of a cost system are the reports. As before stated they are of value only as they produce action and to produce action they must inspire respect and be understood. They must be clear, to the point and free from extraneous matter. They must be like a visitor who steps in, says just what he has to say and immediately gets out. However, the cost system itself may be made up, the reports must be simple and comprehensible. Technical terms should be avoided insofar as possible and if explanations are necessary to make a point clear they should be inserted. One of the greatest difficulties the cost accountant has to face is to remember that others are not as familiar with technicalities as he is, and he is apt to use terms which appear perfectly simple to him and with astonishment find that his work is not producing results.

A few precepts to the end of securing the greatest possible simplicity in a system may be in order at this point:

Avoid splitting hairs. Remember that after all costs are but estimates. Definite and direct expenses should be strictly allotted, but indefinite expenses and overhead, not susceptible of exact distribution should be prorated in the easiest manner possible consistent with common sense. There is

no use in spending much time working calculations to five or six decimal points when the basic assumptions may be from 10 to 20 per cent out.

Scrutinize carefully each step in the system and every form to see that it provides for obtaining all essential information, without extraneous details. Look ahead and see what data secured will pave the way for some beneficial action or give useful information but do not attempt to cover every possibility. Remember the system can be expanded later but it is very difficult to cut it down.

Make all forms as simple as possible and do not ask for information beyond the ability of the men to fill out. Study the facilities at their command and set the forms accordingly. Do not attempt to get refinements of elapsed time, etc., beyond reasonable expectations.

In presenting reports write in the language of the recipient. Do not expect nontechnical men to appreciate technical terms or fine shades of the meanings of words. If necessary to use a technical term, do not hesitate to take the space to explain its meaning. The cost accountant may often have to go through long and complicated computations to arrive at the facts in a case, but his working papers need not necessarily be made a part of the final report.

Centralized Responsibility

Each man responsible for a department or a division is entitled to know how the results of his efforts are working out. In order to correct a condition it is necessary to know whom to hold responsible for results. To these ends it is essential that all the factors under each man's control be clearly shown and segregated from those beyond his control.

As an example of this the following extract is taken from the old form daily report of a certain mill:

	Cost Per Ton
Labor	$1.00
Conversion	6.30
	$7.30

It was found on examination that "Labor" included direct and repair labor, while "conversion" included supplies used, steam, electric and waterpower, part of the overhead, etc. Of this $6.30, but 12 cents was directly under the foreman's control. Obviously if the expense was high it was impossible to know whether it was his fault or not.

After revising the report it took this form:

(a)	Manufacturing labor	.75
(b)	Repair labor	.25
(c)	Supplies	.12
(d)	Miscellaneous	6.18
		$7.30

Items (a) and (c) were under his direct control; (b) partially and (d) were all matters that he had nothing to do with but which were put in to show the total cost. If (a) or (c) went up out of reason he and he alone was responsible and he knew it.

To this end in laying out a cost system, centers should be arranged according to the natural flow of the process. Proper definite distribution of authority is a matter of organization, but so far as possible under the existing organization the accounting procedure should clearly define responsibility and in all cases factors under the direct control of the men should be segregated and distinct from those only partially under their control or beyond it entirely.

Relativity

All things are understood by their relation to some known thing. It is therefore essential in presenting facts to be sure they are comparable to some other known factor, either stated or appreciated by previous experience.

Thus when statistics are given, if no standard of comparison is clearly shown, care must be taken that the method of compilation and presentation is the same as prior practice. For example, if the cost per ton for soda pulp was generally known to be correct at about $50 per ton exclusive of depreciation, no useful end would be gained by reporting a price of $55 per ton, including depreciation, unless this fact was also stated.

Bases of comparison may be any of the following:

(a) General experience.
(b) Past averages or performance.
(c) An expected amount.
(d) A theoretical base comprising what the management believes the amount should be or what they would like it to be.

The last two are termed "Standards" and are the yard sticks whereby the actual is measured.

Differences from the standards are termed "variances", because they show how far the actual varies from the standard.

Comparisons may be made to disclose either (a) The way a factor is going, termed the "trend", or (b) The degree by which the actual compares with what is expected at the immediate time.

Each is useful and both may have to be employed at the same time. For instance, the cost may be increasing over a period of years but be all right under conditions. Trends show the march of progress and whether or not satisfactory results are being secured by the policies adopted. The latter basis shows whether the policies are being carried out.

The former may be termed "Basic Costs" and the latter "Budgeted Costs".

To develop trends, the standards should remain unchanged for as long periods of time as possible, for even if feasible, to get budgeted results the

standards must be frequently revised to keep them up to date.

To get the benefits of both systems requires practically the operation of two systems simultaneously on a complicated system of reconciliation. If the process be complicated or a vast number of different products be made, this raises a perplexing problem of the cost accounting **versus** results to be secured. Fortunately in the paper industry it is entirely possible to get both without much expense as will be explained later.

The question of relativity is important insofar as the question of the standards are concerned and the policy to adopt in setting them. They may be set in any of the following manners:

(a) Simple averages of past performances,
(b) Good practice based on existing conditions,
(c) Engineering standards considering only the physical capacity of the plant,
(d) Combinations of the foregoing.

The arguments for and against these may be summarized as follows:

Remembering that we are attempting to increase profits by the use of accounting control we shall examine each from that viewpoint.

Averages of Past Performances—This is simple; even mechanical. It affords no incentive for betterment, sets no increased goal to strive for. To use past averages as standards a performance as a means for increasing efficiency is like attempting to lift oneself up by one's bootstraps.

Its advantages lie in its simplicity and the fact that it is something positive to tie up to. The use of any theoretical standard is often difficult to defend against the attacks of the mill men. For these reasons it is probably the one most used, though seldom recommended by the higher authorities on cost accounting.

In any event past performances will play a large part in the setting of any standards.

Good Practice Based on Existing Conditions—This is theoretically a very excellent basis. The difficulty lies in defining what good practice consists of. It may be possible to establish it by means of time studies; by the judgment of some high executive in the mill who has sound practical knowledge of conditions, or it may be taken by using the averages of periods where efficiency was high. For example, in setting standards for a paper machine, the thirty best days of some previous year may be averaged as a base, or the three best months, etc. Generally speaking, such standards are either set purely by the judgment of the management or by some positive method such as time studies, best averages and the like. The latter method is preferable as it is always wise to get some base that can be proven feasible; to get best results with standards they must be acceptable to the men whose performances are being judged.

Taking existing conditions into consideration has the disadvantage that when improvements are made the standards must be revised or actual performance either exceeds standard or worse, the center does not exert itself to the utmost at is does not need to meet the standard.

As the basis of a budgetary control, whose whole aim is to forecast probable results under existing conditions, this basis is perfectly satisfactory.

Engineering Standards—By this is meant using as a standard the absolute maximum of capacity, etc., regardless of the fact that it is generally understood that 100 per cent cannot be attained.

It has the advantage of being fairly positive. For instance there are but twenty-four hours to a day. To use twenty-four hours as the standard operating time of a paper machine, for instance, and charging off as idle time all time down for repairs, etc., is positive, but it is well known that there will surely be some such idle time.

It is difficult to set such standards for certain classes of expense, such as supplies and repairs and in these cases they become merely exceedingly tight standards, based no some one's judgment and may be difficult to defend.

As it is known that some time must be allowed for on almost all types of machines, is it right to charge this off to profit and loss, or should it be absorbed by the product? The generally accepted idea is that the latter is the case, and hence in setting time standards, some allowance should be made for this factor and somewhat less than the maximum used.

The best practice is to arrive at standards through a conference between the department heads and the management whereby the best possible practice is decided on and that is mutually agreeable to both sides. There is no rule to lay down. Common sense must rule always with the idea in mind of setting standards which, while feasible of attainment are still incentives to better practice than at present prevailing.

Before leaving this question of relativity, the distinction between standards to develop trends and for actual performances should be made clear. The former may be termed "Basis Costs" and the latter "Budgetary Costs".

In the latter case the aim is to see how actual performance at present compares with what it should be at present. It is a short range vision, a "close up". It gives immediate control but its usefulness is only for the present. Basic costs may be of lesser value for immediate control but give a broad perspective of the progress of the business. They give a picture of long periods, often many years, and are useful long after the value of budgetary costs has passed.

In budgeted costs the control is obtained through a direct comparison between the actual and the standards, hence the standard itself is of great importance. In basic costs the operations of one period are compared with those of past periods to observe the trends. The standards are but an instrument in the process and, therefore, are not so important of themselves. As they remain unchanged for long periods of time eventually considerable variances may be expected and so, purely for psychological reasons, it is well to have the standards set sufficiently high that it is unlikely that they will ever be exceeded.

As the matter of distinction between budgeted costs and trends are most important in getting the greatest value of an accounting control an example will be given to illustrate the point concretely.

Let us take the case of a soda mill and consider its operations for three different periods in each of which the prices for wood, chemicals and items of conversion are different. According to the budgeted basis, the current cost is based on actual present usage and prices and the budget on standard usages but current prices. In the case of the basic costs the current cost is figured on **actual usage** but always at the **same standard prices** and the standard is based on standard usage and the same standard costs. Let us assume these cots work out a follows:

Period	Budgetary Costs		Basic Costs	
	Standard	Actual	Standard	Actual
1	$60.00	59.26	63.00	63.20
2	$75.00	76.80	63.00	62.89
3	$62.00	62.30	63.00	62.60

It will be noted

(1) That in Budgetary Costs, the standard is different for each period but is uniform with the basic costs.

(2) That the budgetary costs tell us that period 1 is satisfactory but periods 2 and 3 are not.

(3) The budgetary costs tell us nothing as to how progress is being made in reducing costs, etc. As standard usages, etc., may be changed from period to period depending on conditions as well as prices of material, neither the actual or standards are comparative. We know nothing about the trends nor results of efforts to reduce costs.

(4) The Basic Costs disclose a decided trend towards lower costs. As all prices used are uniform there is only one factor that brought this about—operating conditions; it tells us that our efforts are producing; it enables us to make direct comparisons over long periods and it enables us to compare the operating results over different periods in which prices may be vastly different.

In the budgetary costs, comparison being made directly with the standard the accuracy of the standard is important; in the basic costs, comparison being made as between operations during different periods, the standard itself is of little importance.

Reduction of Variables to a Minimum

A variable is an element of cost that varies independently of the other elements. For example, in an actual cost we have the actual expenses divided by the actual production. Either the expenses or the production may vary quite independently of each other. Thus in this case we have two variables.

It is essential, in order to see just what has occurred that we reduce the number of variables to a minimum or isolate each one. Failing to do this, we are at a loss to know which caused a change and where to lay the responsibility for a change. In the above example we may have the following:

Expenses, $1,000.00
Production, 100 tons
Cost, $10 per ton.

Suppose expenses increase and production both change to give a final cost of $15 a ton. Can we say expenses went up? Is that the cause? What if production went down? The fact is that this change of $5 a ton gives us no control in itself at all. We have to analyze it to find the cause.

It this is the case with a cost made up of only two variables it is easy to see what difficulties we may encounter when we meet with many variables each acting independently of each other.

Analyzing the variables to find the true cause of a change is one of the major problems of a cost accountant and to the extent that he is able to accomplish this the value of his work may consist. Many ingenious methods are centered around this principle and are the basis of several of the modern systems of cost accounting.

Standard costs, in the use of budgets for expense and standard rates for determining conversion chargeable to the product and to idle time is based on this principle. In this expenses are separated from production and automatically analyzed separately. The cost of the product is not affected by the actual costs but is purely an operation condition.

The system of basic costs outlined above is a further extension of this idea. It endeavors to develop trends through elimination of all but one factor, operating conditions.

Many other phases of this principle will be developed, and, in fact, it is with the idea of increasing profits that we shall endeavor to show how to analyze the costs and isolate one by one the important operating conditions to see which one may be improved and where costs may be reduced.

(*Continued on page* 1389)

Current Thought by William Sibley

The Obsolescent Employee

WRITING in this place a few months ago I touched upon the matter of obsolescence as applied to mechanical equipment or processing methods. At that time I offered the obvious, but too frequently refused conclusions that the machine or method which has outlived its usefulness, whether by reason of age or the advent of improvement, should immediately be scrapped. It is a fact capable of conclusive proof that the majority of our paper and pulp mills would make both increased profits and higher quality materials if they would scrap the obsolete and adopt the improved machines and methods that are on every hand. The refusal of mill owners to admit of that fact, obvious even to the casual observer, is costing this industry an incalculable amount of money and an untold number of years of progress. Many mills today are surviving in spite of, not because of, their equipment and methods.

There is another side to this matter of obsolescence, however. The employee. Can the conclusions reached and the suggestions made with respect to machinery and methods, also be applied to men? When a man has reached a state of inefficiency, or has arrived at the place where his removal and substitution is warranted by coldly calculated production, should he be scrapped?

I believe it would be no exaggeration to say that throughout the paper and pulp industry there are hundreds of foremen who are clamoring for the replacement of certain men now in their departments. These workmen have been in the companys' employ for a number of years, but neither their length of service nor their age entitle them to a place on the pension list, should such a list exist. They have never ranked as thoroughly competent men, but because of faithful service retained year after year it has grown increasingly difficult for the foremen to either effect their discharge or transfer. Paraphrasing the title to a nationally known cartoon "There is at least one in every mill."

The problem of the obsolescent employee was recently discussed, at some length, by the National Industrial Conference Board. In this discussion it was pointed out that the steady introduction of machine processes, which have in varying degrees reduced the need for manual labor, has necessitated many readjustments. Certain employees have been slow to grasp the new methods and the new requirements. They are somewhat confused by the accelerated pace of production, and while no greater exertion, and possibly less, is demanded, a degree of alertness and concentration are necessary which they do not seem to possess. They have passed the adaptable age when adjustments can be made easily, and inwardly they seem to rebel against the new order which has so unsetled their attitude toward their jobs. The uncomplimentary comparisons occasionally made by the foreman between the obsolescent employee's work and that of certain younger men, whom he considers his inferiors in all-around skill and ability, are very distasteful and resented. The obsolescent one only vaguely senses the fact that conditions in industry are changing so rapidly that he can not keep pace and that he is steadily slipping backward. Still possessing health and vigor, with years of experience in his trade and anticipating many more years of work, he has become a liability to his department and the foreman is demanding his replacement.

Many paper men today are debating, at least subconsciously, the policy that should be adopted in such cases. It has long been a common practice to transfer employees who have grown old in the service to lighter jobs, such as those of watchmen, janitors and elevator operators. But such jobs are limited in number and necessarily pay a substantially lower rate than productive work. And thus a new and large group of employees, (taking the industry as a whole) whose period of productive usefulness has been prematurely shortened by a combination of circumstances, is intensifying the problem of providing for those who are becoming a drag upon production.

The practice of some industries to set age limits, usually between forty and fifty years, above which they will not take on new employees, seriously limits the opportunities for reemployment of these workers in case of discharge, and the companies, realizing this and feeling an obligation to these employees who have given many years of service, hesitate to turn them out. At the same time, efficient operation is required of the management, and the foremen, in turn, are held responsible for obtaining adequate and economical production from their departments. To do so, they must have competent

operatives, and the less competent employees are a handicap which they feel that they can ill afford to carry. I sometimes wonder whether it would be a more economical procedure to retire obsolescent employees on partial pay, rather than to have them continue to retard efficient operation.

Viewpoints and Methods

In comenting on the obsolescent employee problem one prominent industrialist said:

"Factories employing large numbers of men can, if they are willing to take the time and trouble, find employment for the men who do not wish to retire, as long as they are really able to do a reasonable amount of work. These men realize the fact that they no longer are able to earn as much as a vigorous young man, and are willing to take a job which will pay them less than they have earned in the past, but which will give them a reasonable return for their labor. The difficulty in handling these old men arises largely from the attitude of the foreman who is required to produce a given amount, and whose conditions demand able-bodied men to meet these requirements. There are, however, a number of jobs around a large factory on which such men can be placed without really interfering with the production requirements of the foreman."

Another manufacturer, in a totally different line, wrote as follows:

"For some years we did not have any cases of this character, but a few months ago we met the serious problem of dismissing a number of employees in a certain department who had averaged from ten to eighteen years of service. Most of these men were rather well along in years and in all probability would have been unable to obtain employment elsewhere. Each one of the employees so affected was given individual consideration. Those having completed over fifteen years of continuous service were given a pension in a reduced amount, and those employed under fifteen years were given a cash amount at the time of the lay-off."

Almost diametrically opposed was the opinion of a third manufacturer who said:

"Ten to fifteen years' service hardly justifies any very great consideration, and in most of these cases we would probably give them a few weeks' pay and lay them off. Beyond that, however, we would not go. We, of course, try in every instance to transfer them to lighter work with which their physical condition is compatible, and we have nearly all our lighter positions filled by aged men who have been in our service for a considerable length of time.

One of the things that is militating against employment of men of mature years is the very fact that they feel that a moral responsibility attaches to their employer after ten or fifteen years of service. I think that we will all feel more kindly toward the mature man if he gets this idea out of his head and, if after ten or fifteen years of employment at advanced age he finds it necessary to retire, he does so without imposing any further burden upon his last employer. The men who grow old in our service do not present the same problem, as we feel a very definite responsibility attaches in these cases and we endeavor in each case to discharge it."

The problem of the employee who has outlived his productive usefulness, but is still physically capable of earning his living is likely to grow more rather than less serious. When Mr. F.W. Taylor first instituted his differential piece-rate method of wage payment, thereby providing a high reward for exceptional productive accomplishment and correspondingly low reward for failure to reach the standard, he frankly stated that the system was calculated to attract and to retain the exceptional workers and to discourage and eventually to force out those who were not capable of meeting the standard. The criticism of the plan made then, (that these less desirable employees must find employment somewhere or they would create a grave social problem), seems not to have suffered by reason of present day conditions or recent changes. The number of obsolescent employees may be comparatively small in each establishment, but if this situation of premature loss of productive value is widespread as it appears to be throughout industry generally, and if this condition is to be aggravated by progress in manufacturing technique, which most certainly will continue unabated, some adequate, just and equitable solution must be found for the serious economic and social problem which it presents.

Cost Accounting

(*Continued from page* 1387)

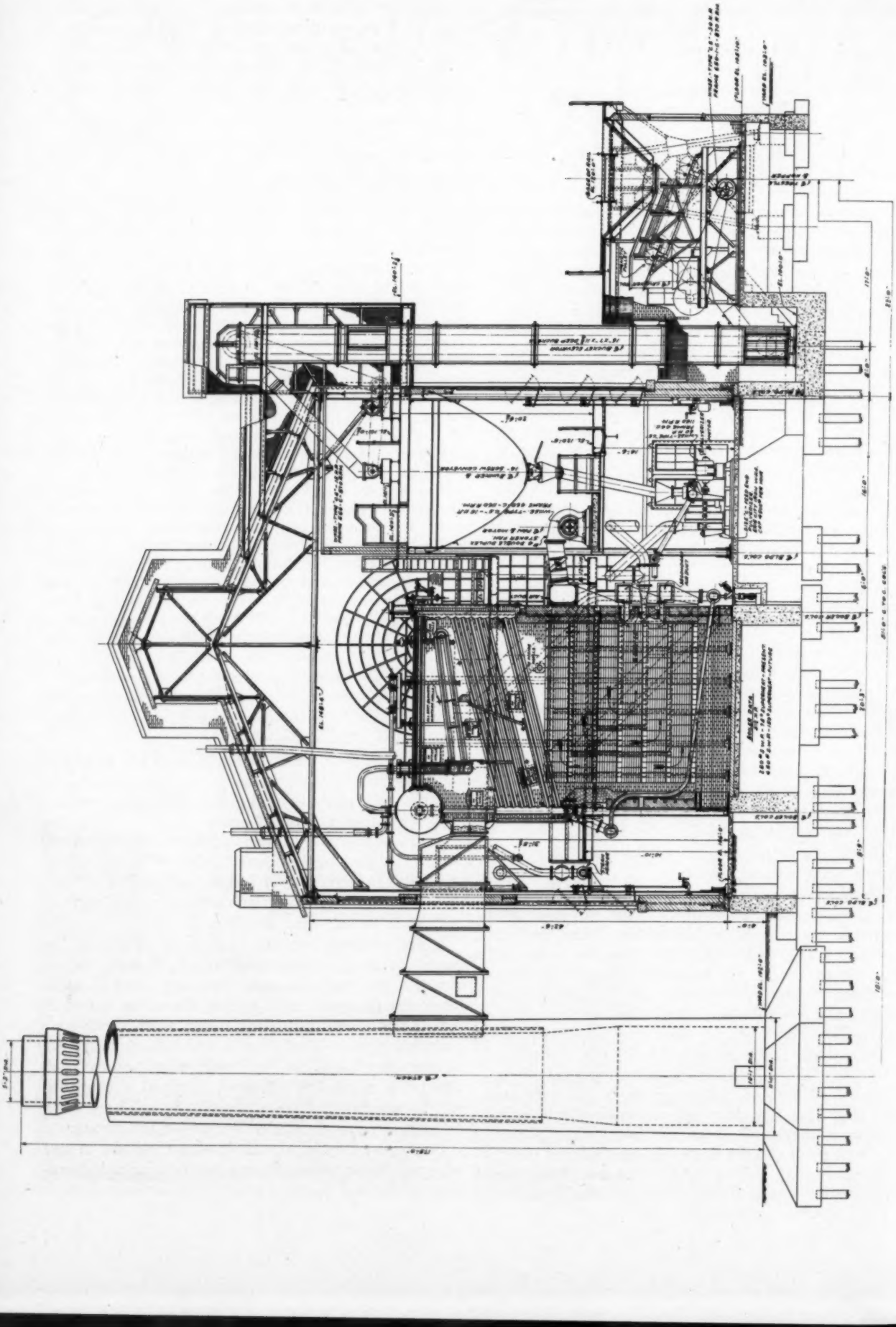
As in an algebraic equation, it is necessary to eliminate all but one of the unknowns to solve the problem so it is with costs, reduction of variables is essential to adequate control.

These four then are the basic principles of accounting to increase net profits:

(1) Simplicity—So that reports may be understood and acted upon.
(2) Centralized responsibility — To prevent "passing the buck."
(3) Relativity—To judge the results.
(4) Reduction of variables to a minimum—To solve the problem.

It may appear peculiar that accuracy is not included as an essential, mechanical accuracy is assumed. Naturally no costs are any good if additions are incorrect, if 2 x 2 is shown as 5 and if errors are made in posting. But that is not cost accounting, that is arithmetic and bookkeeping. If, on the other hand, the four basic principles are kept always in mind and followed, the cost accounting will be accurate. If they are not, it will be always difficult, frequently misleading and often wrong.

Subsequent articles will discuss methods in use whereby these principles are put into actual operation to the end that the profits may be increased.



Section of the steam power plant of the Wausau Paper Mills Company, Brokaw, Wisconsin

New Power Development at Brokaw, Wisconsin

Wausau Paper Mills Company Put into Operation New Boiler House and Hydro-Electric Plant

THAT the present tendency in the paper industry is towards higher efficiency and modern equipment is again proved by Wausau Paper Mills Company who have recently put into operation their new boiler house and hydro-electro plant. This Company's plant is situated at Brokaw, Wisconsin on the Wisconsin River and has a nominal capacity of 130,000 lb. per 24 hours, of fiber, manila, bond and kraft papers; 50,000 lb. of ground wood and 110,000 of sulphite fiber. The paper mills and auxiliaries were driven in part by water wheels, in part by steam engines and in part by motors. Prior to the installation of the new boiler plant and hydro-station, direct-current generators driven by water wheels supplied light and power to a number of auxiliaries, and about 500 kw. of alternating-current power was also purchased from the local utility. A 1000 kw. steam turbine was installed several years ago as a standby source of power, but has been operated only at short intervals.

The old boiler house consisted of six 150 lb. pressure, two-pass boilers of 3500-4000 sq. ft. of surface. Two of these boilers burned wood refuse from the mills, in combination with purchased hog fuel. The other four boilers were equipped with stokers burning coal. The steam generated in these boilers was used in part for digesters and in part to supply engines running paper machines. The exhaust from these engines at 25 lb. pressure was used in paper drying rolls.

As some of the old boilers were of obsolete design and further in view of the relatively inferior operation of the remaining units, the question of more economical steam and power provision was taken up. A report and study of the entire situation was made by Freyn Engineering Company, in which several alternatives were considered.

In one arrangement the boilers were merely to be replaced by larger and more efficient units. In another, new high-pressure boilers were to be installed in combination with a turbine generator, equipped for bleeding steam to the digesters and to the mill engines, a small amount of steam passing to a condenser to ensure a supply to the intermittent steam uses at all times. The steam balance was such that additional electric load would be required in order that the steam input might be sufficient to meet the fluctuating demand for steam at reduced pressure for the engines and digesters.

Potential power in the Wisconsin River at Brokaw was investigated, also the efficiency at which this power was utilized. As the existing water wheels were of obsolete design, additional power development over a greater portion of the year offered attractive returns on the indicated investment. It was decided to install a water wheel of 1420 b.h.p. capacity, driving a 1100 kw., 1375 kva., 3 phase, 60 cycle, 460 volt generator, at a site on the existing dam.

The generator was to supply the motors which previously took power from the utility, as well as some additional motors, replacing portions of the line shaft drive from obsolete water wheels, and supplying the power required for lighting. Lighting was formerly obtained from a separate water wheel generator, which is now eliminated.

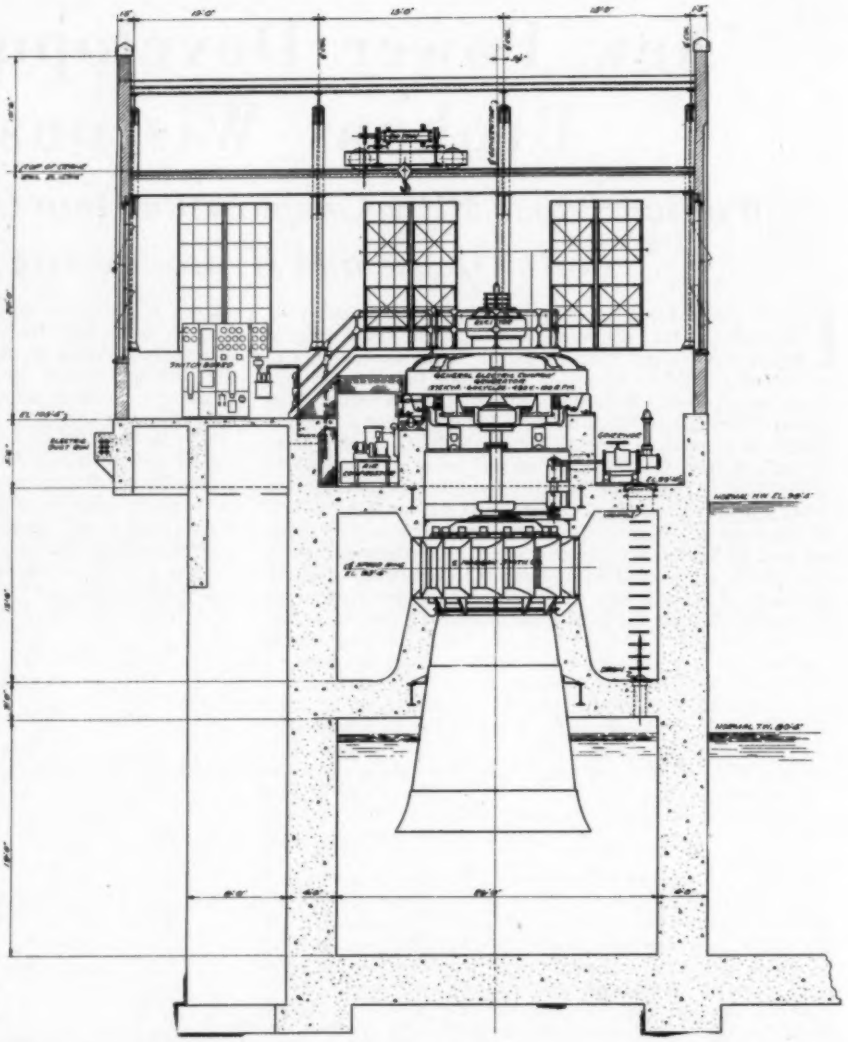
It was decided to install new high-pressure boilers, designed to take care of future developments, but to operate at 150 lb. for the present. Steam from these boilers was to be used on present digesters and paper machine engines, exhausting at 25 lb. pressure to the paper drying rolls, and to operate the existing 1000 kw. steam turbine during periods of low water, when the water wheel could not develop full capacity.

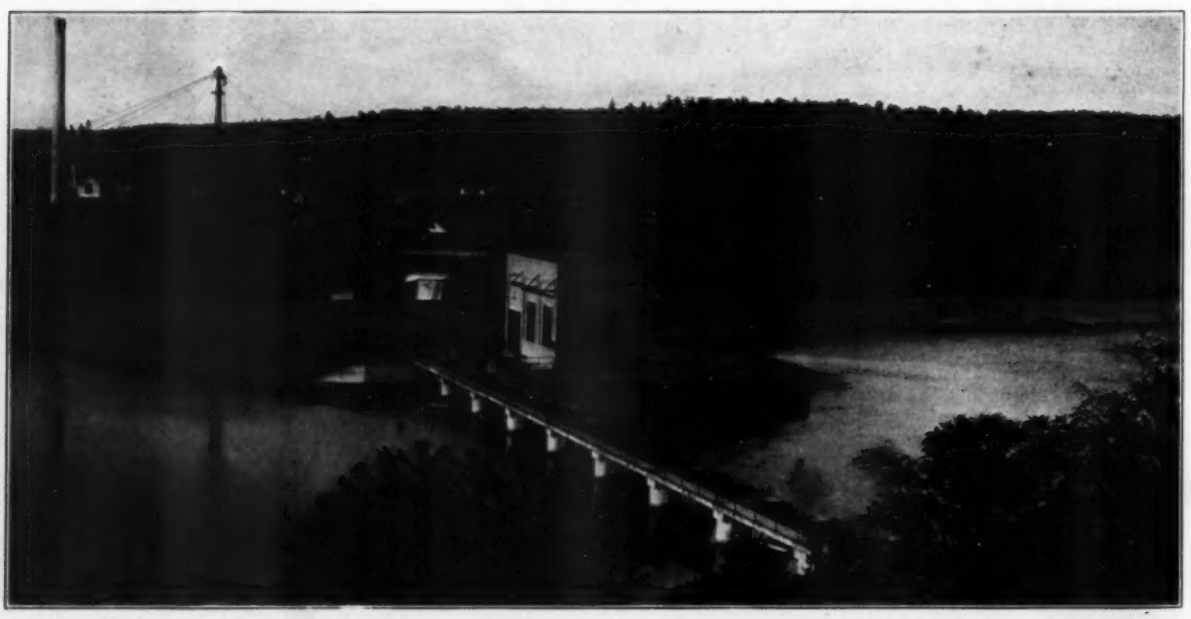
Exterior of the boiler house, showing the paper mill in the background

The New Boiler House

The new boiler house, which was completed in September, 1928, consisted of a brick building, 47 ft. 6-in. long x 51 ft. 9-in. wide, housing two water tube boilers, each having 5120 sq. ft. of heating surface and built for 450 lb. working pressure, 150 deg. F. superheat. They are equipped with water screens, air-cooled side walls, and arranged for pulverized coal firing. There are three Unitype pulverizers, each designed to deliver 4,500 lb. of coal per hour and driven by 60 h.p., 220 volt motors. One pulverizer is a spare unit arranged to serve either or both boilers. Sufficient space is provided for the installation of a third boiler at a future date.

A steel trestle on the north side of the boiler house connected to an elevated track provides for incoming coal. Coal is unloaded from railway cars into a track hopper, from whence it passes over a belt conveyor and magnetic separator pulley to a coal crusher. This equipment is driven by a 30 h.p., 220 volt motor. The crushed coal is elevated to the top of the boiler house by a bucket elevator and distributed into bins by means of a 14 in. screw conveyor, being driven by a 15 h.p. motor. The crushed coal is fed by gravity from the bins to the Unitype pulverizers. Variable speed, direct-current, ¼ h.p. motors are provided for the pulverizer feeders, their controllers being regulated by a combustion control system operating on steam pressure. Each boiler is provided with a No. 4 double-duplex secondary air fan, driven by a 15 h.p. motor. A concrete stack, 175





Above—Section of hydroelectric station *Below—Up-river side of the dam and hydroelectric station*

feet high, serves the two boilers and is arranged to accommodate the future unit.

Manual control is provided for all motors in this boiler house. The starting equipment is located along one wall on the ground floor and fed from a common feeder. Each motor is protected by a fused knife switch and overload and novoltage relays. All wiring is run in steel conduit

Electric control for motor-driven auxiliaries in the boiler house

including lighting. Vapor proof lighting fixtures are installed throughout the building.

Neither economizers nor air heaters are installed, but secondary air is heated to about 150 deg. F. through the air-cooled side walls. Coal is crushed and pulverized as received. When it is necessary to use coal having more than 10 per cent moisture, partial drying is effected by drawing some of the hot furnace gases through the primary air inlets on the pulverizers. Furnace draft is maintained at 0.2 in. head of water by automatic damper control. The combustion control system consists of a master controller governing the speed of the disc coal feeders to the pulverizers and the position of dampers in the secondary aid duct between the fans and furnaces. Manual adjustment of coal feed is made from time to time by screw control of coal feeder hopper at each pulverizer when changes in character of coal make it necessary.

Wood Refuse Used as Fuel

Two of the old boilers have been retained in service to burn wood refuse consisting of bark and saw dust, containing approximately 50 per cent moisture. This fuel is mostly hand fed to the dutch oven furnaces and burned by cone firing. The steam output from the refuse fired boilers fluctuates, due to the charging of wet fuel at regular intervals regardless of steam demands of the plant, with the result that a corresponding intermittent demand for steam exists at the new boilers. While the influence of this intermittent steam demand is seen on the steam pressure, feed water flow and, to some extent, on the waste gas temperature charts, the combustion control system aided by the instantaneous response of coal pulverizers and boilers to load changes has shown remarkably uniformity in CO_2 content of waste gases at all loads. Overall operating efficiencies of over 77 per cent are maintained, including week-end shut-down losses. This performance is quite satisfactory in view of the intermittent load conditions.

The effect of intermittent steam delivery from the wood refuse fired boilers is plainly indicated on the accompanying charts taken from the steam pressure, flue gas and CO_2 recording instruments in the new boiler house.

The master controller is adjusted to allow as much latitude in steam pressure variations as is considered permissible at the paper mill drives so as to avoid extreme variations in coal feeder, pulverizer, fan and feed pump controls.

The Hydro-Electric Station

The new hydro-electric station is situated on the north side of the existing dam. It consists of a brick building, 28 ft. wide x 48 ft. long, having a 20 ton hand-operated crane installed for repair work. The water wheel is of the vertical type of S. Morgan Smith manufacture, and is

Erie City pulverizers on the two boilers in the boiler house

rated at 1,420 h.p., 100 r.p.m., 17.5 ft. head. It is equipped with a 16,300 ft. lb. Woodward oil pressure governor, located on the generator floor. This governor operates steel-plate balanced, wicket-type gates. A motor-driven oil pump pumps oil at 200 lb. pressure for the governor.

Manually-operated air brakes are arranged to stop the wheel after the gates are closed. A small motor-driven air compressor supplies air for operating the brakes. The main shaft bearing is of the lignum vitae type and is provided with a continuous supply of clean water furnished by a motor-driven centrifugal pump located on the generator floor. The water wheel is direct-connected to a General Electric Company, 1375 kva., 1100 kw., 100 r. p. m., 3-phase, 60 cycle, 480 volt, vertical generator, with a direct-connected 6 kw., 125 volt exciter.

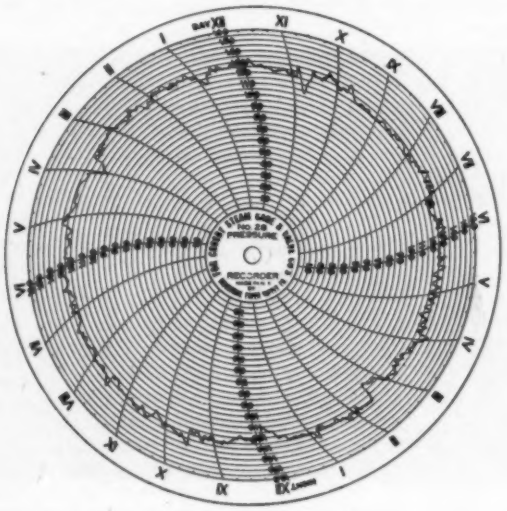
This station is designed for semi-automatic operation. The machine is started and put on the line by an operator, after

Interior of hydroelectric station, showing the generator and semi-automatic switchboard controlling it

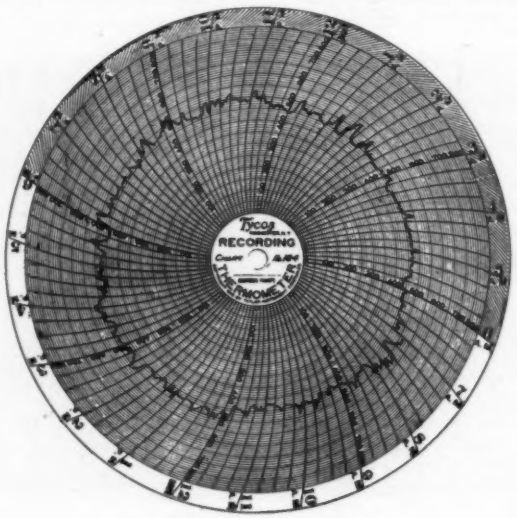
which no attendant is required. Protective relays are installed at all danger points, arranged to trip the generator off the line and close the gates in case of trouble. An annunciator lookout relay indicates cause of shutdown.

The switchboard consists of three panels, a generator panel, an exciter and voltage regulator panel and a tie panel. Connections from the generator to the switchboard are made by means of copper bus bars. The following protective devices are provided: over-speed limit device, low voltage relay, over-voltage relay, differential current relays, over-current relay, bearing thermal relay, oil pressure failure relay, and generator thermal relays. The majority of these devices operate from a 12 cell Exide storage battery with Balkite trickle charger. Operation of any protective relay causes the governor trip coil to release, closing the gates and also operating the trip coil of the generator oil switch, disconnecting the generator from the line. Provision is made for synchronizing the generator with the 1000 kw. steam set for emergency services, or in times of low water.

Since the existing power distribution switchboard is located in the bleach building together with the steam generator set, it was necessary to construct a tie line from the new hydro-plant to this building. Owing to the heavy current to be transmitted, necessitating very heavy poles, if an overhead line was constructed, it was decided to install an underground system. Three conductor varnished cambric insulated lead covered cable was used for connecting from the hydro-station tie panel to a new tie panel installed at the bleach house switchboard. A concrete dust run with fiber conduit and suitable manholes was laid from the hydro-station to the mill buildings for protecting the lead cable.



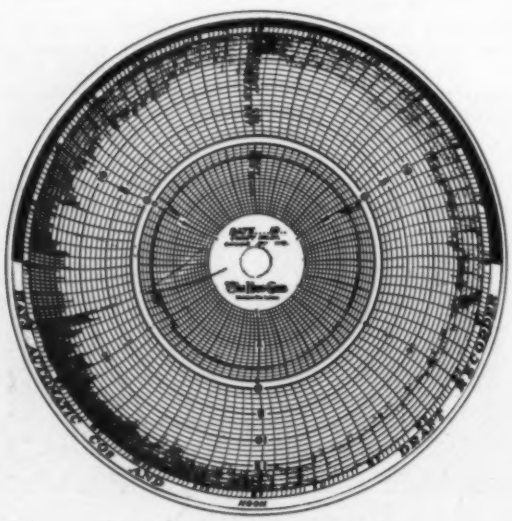
Steam pressure chart



Flue gas temperature chart

Through the buildings the cable was racked to the structural members. Several new feeder panels were also added to the main distribution switchboard to provide for the additional motors added to replace small water wheels which we disconnected. Lighting, which had been supplied by a small direct-current water wheel generator, was furnished by two 50 kva. 460/115 volt lighting transformers, also installed in the bleach building.

This plant was put into operation in April 1928, and has been carrying loads around 900 kw. with very good results.



CO_2 and draft recorder chart

PRINCIPAL EQUIPMENT AND MATERIALS

Boiler Plant:

2—512 hp. Springfield sectional boilers, 450 lb. steam pressure—Springfield Boiler Company.
3—Size "C" Unitype pulverizers with a capacity of 4500 lb. of coal per hour each—Erie City Iron Works.
2—Convection type Foster Superheaters—Power Specialty Company.
1—2 in. 4 stage, class "SD" volute pump, 140 g.p.m. against 460 ft. head—Worthington Pump & Machinery Company.
1—10x6x12 in. horizontal duplex boiler fed pump, 108 g.p.m.—Worthington Pump & Machinery Company.
1—Reinforced concrete chimney, 175 ft. 0 in. x 6 ft. 3 in. i.d. at top—The Heine Chimney Company.
Forced draft fans—Buffalo Forge Company.
All motors for pulverizers, for burner fans, for coal crusher and feeder, for elevator and screw drive, for boiler feed pump, together with complete control equipment—Westinghouse Electric & Mfg. Company.
Automatic combustion control for boilers—A. W. Cash Company.
Soot blowers—The Vulcan Soot Cleaner Company.
Coal handling system—D. J. Murray Mfg. Company.
Coal bunker gates and chutes—Beaumont Mfg. Company.
Copes pump governors and feed water regulators—Northern Equipment Company.
Piping—Pittsburgh Piping & Equipment Company.
Valves—Schutte & Koerting Company.
Recording boiler feed meters—Simplex Valve & Meter Company.
Co_2 Recorders—The J. W. Hays Corporation.
Flue gas temperature recorders—Taylor Instrument Company.
Magnetic separator pulley—Dings Magnetic Separator Company.
Erection of boiler brickwork—O. H. Warwick Company.
Fire brick and special tile for boiler settings—Chicago Fire Brick Company.
Furnace side walls—M. H. Detrick Company.
Special tile—Walsh Fire Clay Products Company.
Insulating material—Johns-Manville, Inc.
Structural Steel—Worden-Allen Company.

Hydro-Electric Plant:

1—Morgan Smith 1420 hp., 100 r.p.m., 17.5 ft. head, vertical hydraulic turbine.

1—General Electric Company, 1375 kvs., 1100 kw., 100 r.p.m., 3 phase, 60 cycle, 460 volt, vertical generator with direct-connected, 6 kw. 125 volt exciter.
1—Woodward Governor Company, 16,300 ft. oil pressure governor and motor-driven oil pump.
1—15 cu. ft. minute, 100 lb. per sq. in. motor-driven air compressor made by Woodward Governor Company.
Bearing water pump—Worthington Pump & Machinery Co.
20 ton hand-power crane—H. D. Conkey & Company.
Switchboards—Westinghouse Electric & Manufacturing Company.
Storage battery—Electric Storage Battery Company.
Lightning arresters—General Electric Company.
Transformers—Westinghouse Electric & Manufacturing Company.
Lead covered cables—Standard Underground Cable Company.
Structural Steel—Worden-Allen Company.
Roof—U. S. Gypsum Company.

Increasing the Capacity of a Mill's Power Plant

Covington Mill of West Virginia Pulp & Paper Co. Installs Several High Pressure Boilers and Turbines

IN KEEPING with the march of progress in pulp and paper mill practice, as reflected by new and improved methods and machinery, there has been a steady improvement in power plant design. In many mills throughout the country, it has been found necessary to increase the capacity of the power plant in order to take care of enhanced production, and expansion of production meaning greater drafts on the power supply for the operation of machinery, as well as on process steam for the operations of cooking pulp, drying paper, etc. As a consequence, high pressure boilers and turbines, together with new methods of firing are replacing the older forms of power plant equipment in a number of pulp and paper mills.

At the Covington, Va., plant of the West Virginia Pulp and Paper Company, a tryout was made of high-pressure units a year ago at which time two boilers were installed and one 4,500 kw. turbine. So successful did this prove that two additional boilers were installed and an additional turbine, which wil be in operation shortly.

Original Plant and the Proposed New Plans

In one of the two boiler houses of the West Virginia Pulp and Paper Company's mill at Covington, the equipment consisted in 1926 of eleven boilers with a total heating surface of about 65,000 sq. ft., while the other boiler house had six boilers of 32,000 sq. ft. total. These were of horizontal water-tube design with economizers and superheaters. The boilers operated at 175 to 200 per cent of rating most of the time and in winter there was little reserve capacity.

Under the necessity of increasing the capacity of the power plant to meet new conditions calling for increased electric power and greater power reserve, a careful study was made of requirements and three plans were proposed, one of which was adopted. Before outlining the proposals, it may be well to state that at the time the investigation was started two years ago, electric current, three-phase, 25-cycle, was generated by six units, five operating at 440 volts and one operating at 6,600 volts to serve remoter parts of the plant. Three of the units were rated at 1,500-kw., two at 3,000-kw., and one at 4,500-kw. One of the 1,500-kw. units operated straight condensing, all others arranged to bleed steam at 20 lb. pressure for use in the mill. The average load was 12,000 kw. There were also several reciprocating engines, driving paper machines and bleach and screen room equipment, that exhausted into the 20-lb. main.

It is of interest to review the methods which were considered for increasing the capacity of the power plant, as outlined in a recent article in **Power**, as follows:

1—Install additional boiler or boilers in the present boiler houses and push the existing equipment further by means of new stokers, powdered-coal burning or other expedients.

2—Buy outside power and use part of the existing equipment for direct steam at lowered pressures, if necessary.

3—Lay out a completely new plant at a new site, to be constructed in units from time to time as required for plant growth and as the older equipment becomes obsolete.

The studies and estimates showed a number of things: Increasing quantities of 150-lb. and 20-lb. steam would be needed for process work in the future. The larger existing turbines were good for many years of work at good efficiencies within their temperature range. The condenser equipment was sufficient for 12,000 kw. capacity. It would furnish more warm process water than was needed. There was also sufficient capacity to take care of irregularities in power made from process steam. While boiler efficiencies were good, from 10 to 20 per cent better efficiency could be expected from more modern equipment. Half the number of the existing boilers, with their furnace equipment, could be counted on for ten years, though not capable of adaptation to higher ratings without undue expense.

Outside power could not compete with power derived from high-pressure steam discharged at process pressures. Existing boiler houses were not large enough to house the additional capacity required. The generation of steam at 425 lb. pressure would require no non-commercial equipment and if the required additional capacity in kilowatts could be

Turbine room, showing extraction turbine that takes steam at 410 lb., exhausts at 20 lb., and extracts at 150 lb., supplying process steam

manufactured by expanding 425-lb. steam to 150- and 20-lb. pressures, a good heat balance would result, giving additional requirements of 150-lb. steam at a cost of five to ten cents per thousand less than the existing cost. In doing this, no additional condenser capacity would be required. It was found further that units to make and utilize about 140,000 lb. of steam an hour could be operated base load with a maximum efficiency and a minimum of control troubles.

New Plant Construction Begun in 1926

In accordance with the third proposal a boiler house was laid out for five units, each of two boilers, ultimate equipment. Each boiler had a normal capacity of 70,000 lb. steam an hour at 425 lb. pressure and 190° Fahr. superheat. The maximum unit capacity was 90,000 lb. of steam an hour. These boilers had inclined tubes and cross-drums. The furnaces, having partly water-cooled walls, were designed for pulverized coal firing. Operation was to be normally at 250 per cent of rating, with a maximum of 325 per cent.

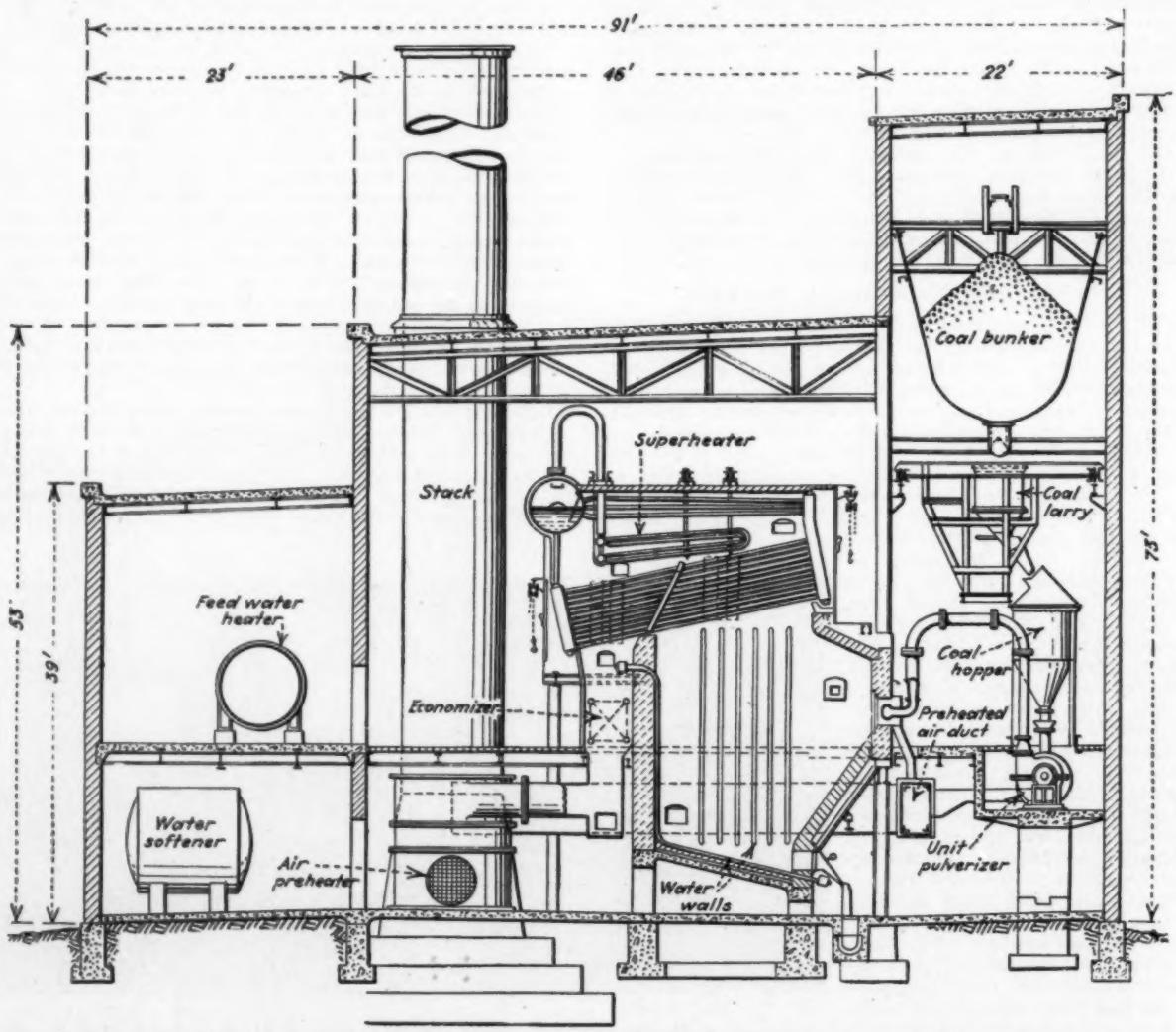
The boiler house was designed to be wholly above ground. Boilers were placed in separate settings. The furnace depth was about 23 ft. Side walls, back and bottom were water-cooled. Superheaters of the convection type were selected and located between the first and second pass, the boiler being baffled to give two cross-tube passes.

To recover part of the heat from the gases which leave at from 750 to 800° Fahr., a regenerative air preheater was installed with a small economizer between it and the boiler, so that gases reaching the preheater would not exceed a temperature of 650° Fahr. The preheaters were built with integral induced- and forced-draft fans, driven by turbines taking steam from the 150-lb. main. Between the economizer and preheater, a baffle-type dust collector was installed. The gases are discharged from the preheater into a self-supporting steel stack, 9 ft. in diameter and 150 ft. high.

Fuel is prepared by unit impact pulverizers, taking coal from an overhead bunker through a distributing weigh-larry and small coal hopper. Coal is brought to the plant and dropped through a trestle to a crusher, thence elevated by a drag chain and sent to a distributing conveyor over the bunkers. All this equipment is motor-driven. No outside coal storage was provided because of the near-by reserve supply of the old plant and the short haul from the mines in a climate not likely to be disturbed by winter storms.

Burners of the turbulent type were adopted. No ash-handling equipment was provided as the coal runs less than 5 per cent ash, 80 per cent of which can be expected to go up the stack, thus leaving little to be removed from the furnace bottom.

The boilers are fed from river water, running three to five grains per gallon of scale-forming materials. The feed water is settled, filtered twice and then zeolite treated. It then passes to an open heater, which takes steam exhausted by



Cross-section of first constructed boiler house at Covington, Va., mill of West Virginia Pulp & Paper Company

the turbines driving the fans and feed-water pump. Additional steam to bring the water to 210° Fahr. is furnished from the 20-lb. line. Boiler blowoff is continuous, drawing from several points on the water walls and discharging through a heat exchanger.

When motorization of the plant was begun twenty years ago, 25-cycle, 440-volt current was adopted. The investment in apparatus of this type had become so large that, when the changes were planned in 1926, it was not deemed advisable to change to sixty cycles. Current at 6,600 volts is used in some remote parts of the plant.

The new power unit is a 5,000-kva. machine, with a 3,600-r.p.m. steam end geared to a 500-r.p.m. generator. This machine is of the extraction type, taking steam at 410 lb., exhausting at 20 lb. and extracting at 150 lb. Its base load, normal operating condition, is 140,000 lb. steam to the throttle, 60,000 lb. through to exhaust, and 80,000 lb. bled. In case one boiler is down, the machine can deliver 3,6000 kw. when

Original unit of new boilers, showing partial view of pulverized coal burners and feed pipes

exhausting 90,000 lb. to the 20-lb. line, with no steam being bled. The machine has no diaphragm, and the proportion of exhaust and extracted steam is regulated by hand.

Mechanical Equipment in the 1926 Extension

In the construction of the two high-pressure units installed

View of end of boiler house before second unit was constructed in the rear and another stack erected

in 1926, the mechanical equipment provided and the manufacturers thereof were as follows:

Boilers and Auxiliaries:

2—Edge-Moor Iron Co., 425 lb. pressure, 8,250-sq.ft. cross-drum boilers, with 710 sq.ft. of water-wall
2—Foster convection superheaters, designed to give 190 deg. F. superheat
2—Foster-Wheeler 1,728-sq.ft. economizers
2—Diamond Power Specialty Corp. soot blowers, six units per boiler
Boiler arches, M. H. Detrick Co.
Firebrick, Harbison-Walker Refractories Co.
2—Ljungstrom C-16 air preheaters, induced- and forced-draft fans integral. Driven by Terry steam turbines.

View of end of boiler house with wall removed ready for addition of third extension now nearing completion

Miscellaneous Material and Equipment:

Boiler non-return valves, Elliott Co.
Turbine non-return valves, Schutte-Koerting Co.
400-lb. valves, Walworth Co.
250-lb. valves, Crane Co.
400-lb. pipe and fittings, M. W. Kellogg Co.
250-lb. pipe and fittings, Walworth Co.
Water-wall piping, M. W. Kellogg Co.
Feed-water regulators, Swartwout Co.
Ash gates, Beaumont Mfg. Co.
Gas flues and air ducts, Tippett & Wood.
Stack, Mead Penn Co.
Covering, Robert A. Keasby Co.
Steelwork, Pittsburgh Bridge & Iron Co., F. M. Weaver Co.

Coal-Handling Equipment:

1—American Pulverizer Co. ring crusher No. 42, capacity 150 tons per hour
1—Webster Mfg. Co. 5-ton traveling weigh-larry
2—Simplex type 4-A unit pulverizers. Capacity 8,000 lb. per hr. each
4—Combustion Engineering Corp. turbulent type burners

Boiler-Feed System:

2—Permutit Zeolite water softeners. Maximum capacity 25,000 gallons per hour each
3—Dean Hill Pump Co., 750-g.p.m. boiler-feed pumps, driven by Terry steam turbines
1—Elliott Co. type E open feed-water heater
Permutit continuous blowdown system, with heat exchanger

Turbines:

1—General Electric Co. 4,000-kw., 3,600 r.p.m. turbine, geared to a 500 r.p.m., 3-phase, 25-cycle, 440-v., 5,000-kwa. generator. Steam at throttle 415-lb. gage, 190 deg. F. superheat. Turbine arranged to extract at 150 lb. and exhaust at 20 lb. Hand regulation of 150 lb. and 20 lb. steam by gate valves on 150- and 20-lb. outlets.

Instruments:

Flow meters, Republic Flow Meters Co.
Boiler meters, Bailey Meter Co.
Draft gages, Paul B. Huyette Co.
Indicating thermometers, The Foxboro Co.
Mercury thermometers, C. J. Tagliabue, Mfg. Co.

Electrical Equipment:

Motors, General Electric Co.
Switchboard, Westinghouse Elec. & Mfg. Co.

Second Unit Now in Construction

The capacity of the power plant has been further increased this year by the addition of two more boilers and an extraction turbine, but the units are not yet in operation as this is presented. In general, the lines of the original plant of 1926 have been followed in the design of the second unit, the No. 3 boiler house, which will accommodate two new boilers and an additional turbine.

The design of the reconstructed power plant was worked out by the engineering department of the West Virginia Pulp & Paper Company, in collaboration with Hardy S. Ferguson, consulting engineer, New York.

Mechanical Equipment in the 1928 Extension

The names of the makers of the principal mechanical equipment in the 1928 extension are given in the accompanying tabulation. Many of the firms named also supplied equipment to the addition made in 1926.

Boilers and Auxiliaries:

2—Edge-Moor Iron Company 425 lb. pressure 8,250 sq.ft. cross-drum boilers, with 880 sq.ft. water walls.
2—Foster convection superheaters, designed to give 190° Fahr. superheat
2—Foster economizers, 1,728 sq.ft.
2—Diamond Power Specialty Company, soot blowers, six units per boiler.
Boiler arches, Edge-Moor Iron Company.
Fire brick, Harbison-Walker Refractories Co., Pittsburgh
2—Ljungstrom C-16 air preheaters, motor driven.
2—Green fuel No. 44 R.B. forced draft fans, driven by Terry steam turbines.
2—Green fuel induced draft fans No. 7SA, driven by Terry steam turbines.

Miscellaneous Material and Equipment:

Boiler non-return valves, Elliott Company, Jeannette, Pa.
Turbine non-return valve, Schutte-koerting Co., Philadelphia
Valves, 400-lb., Walworth Company, Boston
Valves, 250-lb., Crane Company, Chicago
Pipe and fittings, 400-lb., Grinnell Company, Providence, R. I., and Reading Steel Casting Co., Bridgeport, Conn.
Pipe and fittings, 250-lb., Reading Steel Casting Company, Ballwood Company, E. F. Keating Pipe Bending & Supply Co., New York City
Water-wall piping, Edge-Moor Iron Company
Feed water regulators, Swartwout Company, Cleveland
Furnace pressure regulators, Carrick Engineering Company
Gas flues and air ducts, Turl Iron & Car Co., Newburgh, N. Y.
Chimneys, Hendrick Manufacturing Co., Carbondale, Pa.
Covering, Keasbey & Mattison Co., Ambler, Pa.
Steelwork, Pittsburgh Bridge & Iron Works, Pittsburgh
Steam purifiers and traps, Hagan Corporation, Pittsburgh

Coal Handling Equipment:

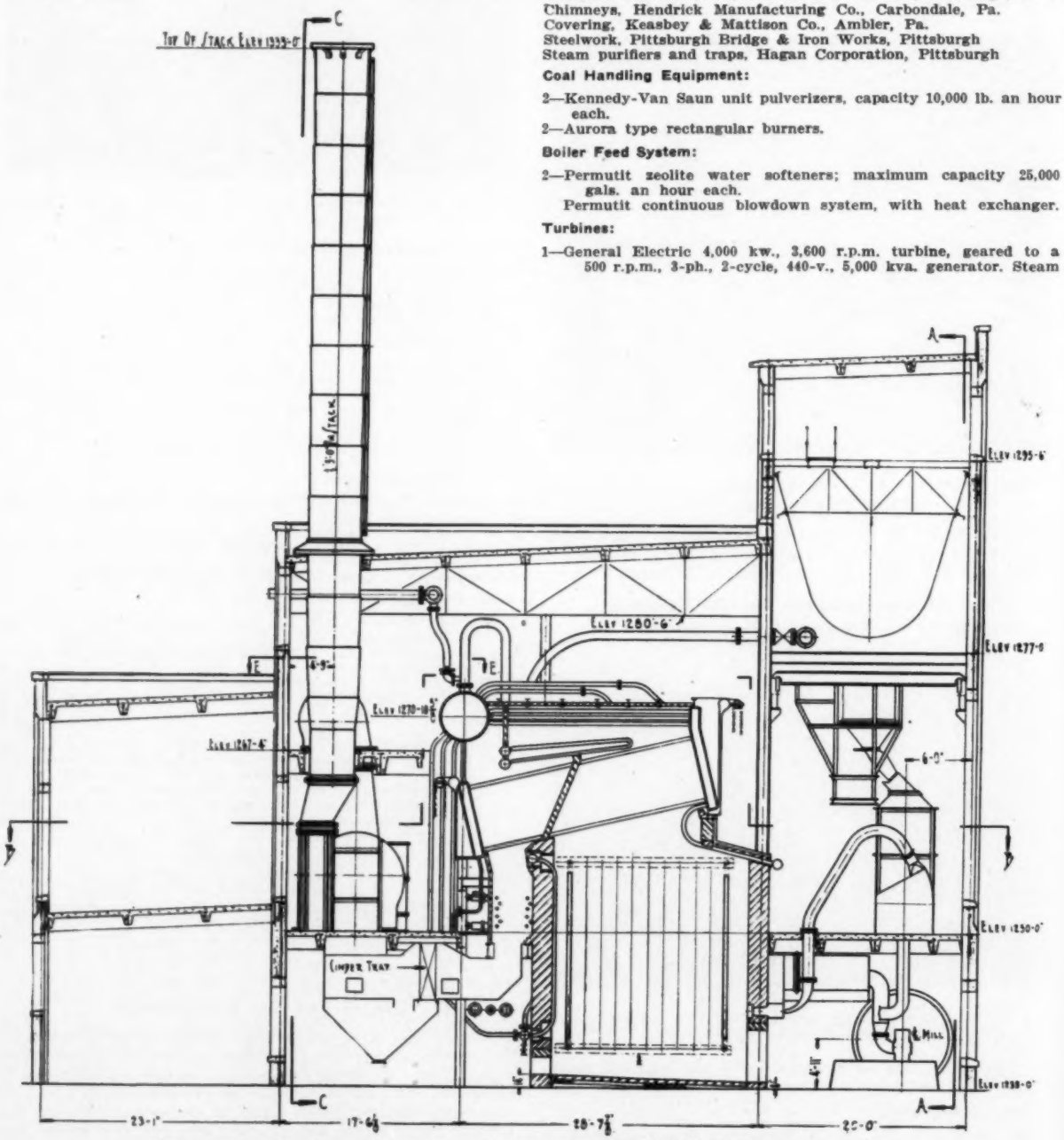
2—Kennedy-Van Saun unit pulverizers, capacity 10,000 lb. an hour each.
2—Aurora type rectangular burners.

Boiler Feed System:

2—Permutit zeolite water softeners; maximum capacity 25,000 gals. an hour each.
Permutit continuous blowdown system, with heat exchanger.

Turbines:

1—General Electric 4,000 kw., 3,600 r.p.m. turbine, geared to a 500 r.p.m., 3-ph., 2-cycle, 440-v., 5,000 kva. generator. Steam



Transverse section of second part of No. 3 boiler house recently added to Covington power plant

at throttle 415 lb., gauge, 190° Fahr. superheat. Turbine arranged to extract at 150 lb. and exhaust at 20 lb. Hand regulation of 150 lb. and 20 lb. steam by gate valves on 150 and 20 lb. outlets.

Instruments:

Flow meters
Boiler meters, Bailey Meter Company, Cleveland
Draft gauges
Indicating thermometers
Mercury thermometers
CO_2 recorders, Permutit Company (Ranerex), New York City
Pyrometers, Brown Instrument Co., Philadelphia

Electrical Equipment:

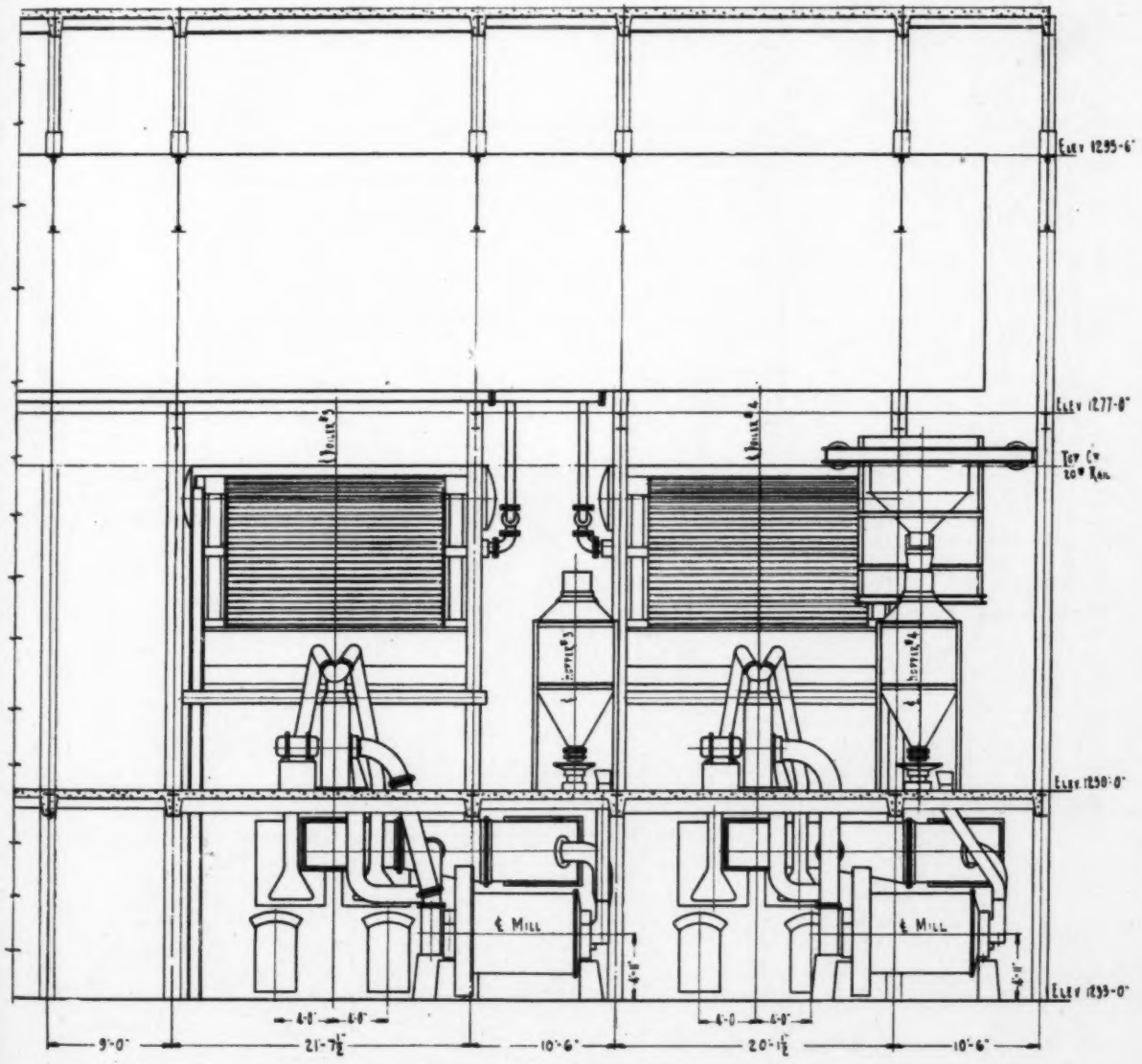
Motors, General Electric Company, Westinghouse Electric and Manufacturing Company, Northwestern Electric Company
Switchboard, Westinghouse Electric and Manufacturing Company

Process for Recovery of Wood Pulp Wastes

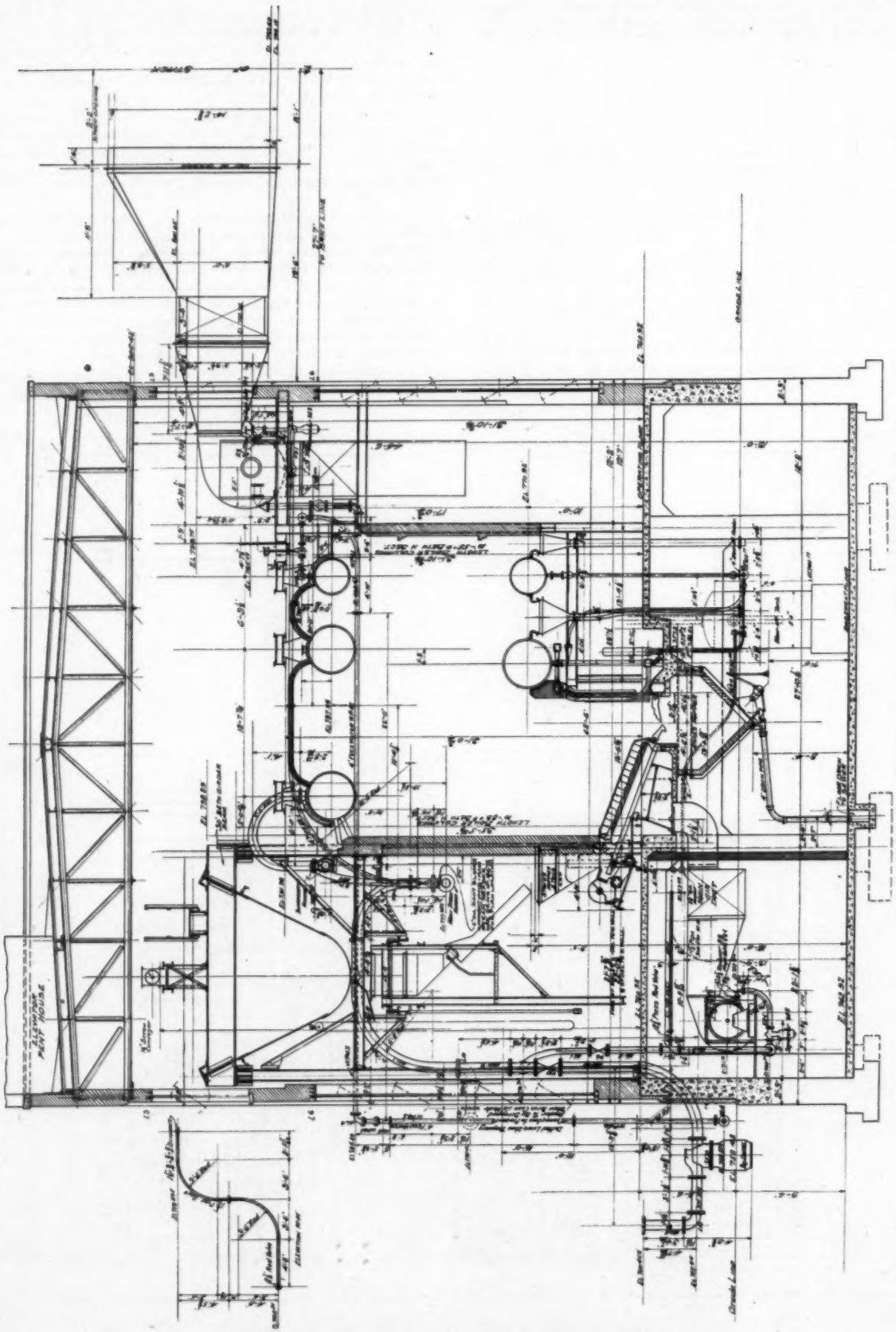
According to **The Engineer** of London, of October 12, 1928, page 405, a process for utilizing the "black lye" or waste from the production of wood pulp by the chemical process has, according to nature, been evolved by Dr. Erik L. Rinman, a Swedish chemist, aided by an English engineer.

The black lye is evaporated down in vacuo to a treacle-like product, which is then carbonized at not above 750 degrees F. in retorts, giving a whole series of valuable products, including methyl alcohol, acetone, methylethylketone, acetone oil, light tar oils, heavy tar oils, and turpentine. The residue from the retorts, known as soda coal, consists essentially of sodium carbonate and free carbon, and is burnt on a special new design of mechanical stoker, which consumes more than 97 per cent of the carbon, the heat being used for steam generation, while the sodium carbonate is extracted with water and reconverted into caustic soda.

A large plant on these lines is now operating under the superintendence of Dr. Rinman at Regensburg in Bavaria, with water from the Danube, turning out 600 tons of pulp a month, while extensions are being carried out to give 2000 tons a month. A British financial group is now to develop the process throughout the world in association with the original company, Aktiebolaget Cellulosa, of Stockholm. A production of 1000 tons of kraft pulp is stated to result also in 25 tons of methyl alcohol, 18 tons acetone, 18 tons methylethylketone, 12 tons acetone oil, 8 tons light oil, and 50 tons heavy oils.



Front elevation of second part of No. 3 boiler house as completed



Cross-section of new boiler house, Bergstrom Paper Co., Neenah, Wisconsin

Bergstrom's New Boiler Plant

Modernization the Object of This Progressive Company

NOT many years ago, the steam power plant of a pulp and paper enterprise was commonly considered by those in authority as a necessary evil. Steam was required for process work as well as for the operation of steam engines which in turn served as prime movers for much of the process equipment. Little thought seemed to be given to the power plant once it was put into operation if it met all of the unusual demands of the plant. If these demands were not met and pressure dropped on the mains, the cry from the production departments to the operating staff of the boiler room was, "Give us steam". Wasteful methods were common, and production was the keyword.

With costs of manufacture on the increase, it became essential that manufacturing costs be cut wherever possible. Many executives upon careful examination found their steam power installations needing a complete revamping to comply with more recent developments in the power field. New mills were able to capitalize on the experience of the older plants and to install boiler plants of up-to-the minute design.

With competition today keener, perhaps, than ever before in the history of our country, finds a group of executives tackling the problem of modernization. A study of this problem of modernization has resulted in careful consideration of a number of steam power plants. Only a short time ago these plants may have been the last word in design and efficiency, but today they are being examined with the magnifying glass, and executives are asking themselves "How long can we afford to operate these plants?" Many of the plants are far from being worn out, but such marvelous developments have been made in this branch of engineering since their erection that the question of obsolescence has become a most important one.

One of the organizations that has considered recent developments in the power plant field is the Bergstrom Paper Co. at Neenah, Wisconsin. Only fifteen years ago, a modern boiler plant installation was completed at their mill. This installation consisted of six vertical boilers equipped with mechanical stokers. Each of the boilers had a rated capacity of 300 h.p. and were operated at 150 pounds pressure.

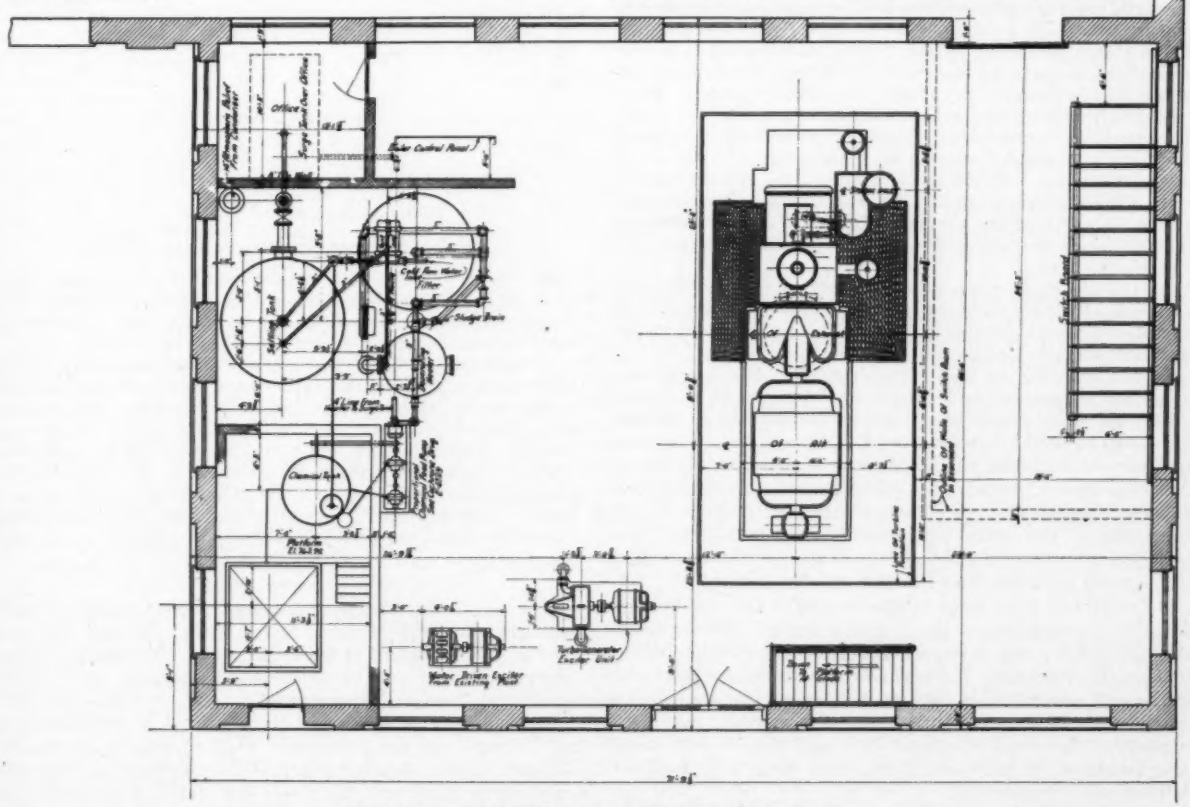
After a complete survey of the plant had been made and requirements of the paper mill considered, it was decided that a reduction of maintenance expense was desirable, more power would be an advantage, exhaust steam should be used for process work, cost of operation of plant should be reduced, and an increased efficiency of the boiler plant should be obtained.

With these objectives, the old boiler house has been torn down, and a new plant erected. The turbine room of the existing plant has been remodeled.

The new building, housing the boiler plant, is of brick and concrete construction with steel trusses for supporting the roof. The roof is of redwood covered with standard Johns-Manville roofing. The outside dimensions of the building approximate 119 ft. by 60 ft.

Inside the building are housed three 565 h.p. Erie City Iron Works boilers of the three-drum bent tube type, equipped with 2-drum integral economizers. The boilers are designed for operation at 350 pounds pressure at boiler and 160 degrees superheat. They are equipped with water screens on the side walls and bridge walls, and are arranged for stoker firing. Westinghouse multiple retort stokers have been installed.

Breechings from the furnaces have been made extra large, and a 185 ft. brick chimney with an inside



Plan of remodeled turbine room, Bergstrom Paper Co.

diameter of 11 ft. at the top has been erected. Such design of breechings and chimney is to permit cinder settling. In fact, the real purpose of the chimney is largely to safeguard the community against any soot menace.

Forced and induced draft fans are likewise part of the draft equipment.

A few other interesting features about the boiler installation include a lime-soda Cochrane water softener and deaerator apparatus capable of operating under 50 pounds pressure, Swartout feed water regulators, complete combustion control apparatus, and a "blow down" into silencing tank.

In operation, coal delivered at the plant is delivered upon specially designed coal handling equipment to an American crusher. After passing through the crusher, the coal is delivered to a gravity discharge vertical elevator which in turn discharges it into a distributing screw conveyor. This conveyor distributes the crushed fuel into a 200 ton coal bunker from which it is discharged into a 2 ton weigh larry. The larry discharges the coal into one of the three stoker hoppers with extensions. Each stoker hopper has a capacity of three tons. From the hopper, the fuel is fed to the multiple retort stoker of the unit, where combustion takes place.

The ashes are discharged from the stokers into a Beaumont ash hopper from which they are removed daily. The hopper has a capacity for 24 hour storage of ashes, and is so arranged that the ashes are discharged by gravity into a motor truck which can be run under the hopper. An arrangement has been made with a local contractor to remove ashes from the hopper. Such an installation together with the arrangement made with the contractor has simplified the ash handling problem.

Water from the Fox River with an average of 8 grains in hardness and considerable organic matter, is softened and deaerated in the Cochrane lime-soda system, from which it is pumped into the boilers with Allis-Chalmers centrifugal boiler feed pumps operating at 3600 r.p.m. This flow of water into the boilers is regulated by means of Swartout feed water regulators. The piping installation is so arranged as to permit automatic blow-down into a silencing tank, and a Permutit continuous blow-down is used to regulate concentration in boilers.

The steam generated in the boilers is delivered to a 2500 kw. Allis-Chalmers turbine with condenser which is located in the turbine room. The turbine is bled at 15 pounds. Theoretically, the installation has been made so that the steam pressure and temperature furnishes electricity for power purposes and steam for process work without steam going to the condenser. To aid in arriving at this theoretical balance, all boiler room auxiliaries are steam and electrically driven. The electricity generated is 440 v., 3 phase, 60 cycle, and furnishes the energy for driving motors throughout the plant.

At this point, it might be of interest to mention that the switchboard is operated by remote control. Although the operating panel is located in the turbine room, the distributing switches are located centrally in the mill.

In the building of this plant, considerable thought was given to the present and future requirements of the paper mill. The third boiler which has been installed in the new plant will be used for the present simply as spare. One boiler will always be down so that it will be easy to constantly maintain the equipment. It is even possible, in case of a most unusual circumstance, to generate sufficient steam to supply the needs of the present plant with only one of the three boilers. Likewise, space has been reserved for the fourth boiler to be installed when the occasion demands.

A locker and toilet room is also located in the new building for the convenience of the working force. This room is equipped with a unit heater which is supplied with air from outside the building. The room is also to be equipped with high, well ventilated lockers as well as an electric washing machine. It is believed that the use of a washing machine in a plant of this kind is a novel idea, and that it will permit any employee to more easily maintain their mill garments in best possible condition.

Orbison and Orbison of Appleton, Wis. were the consulting engineers on the project, while C. R. Meyers and Sons Co. were the general contractors.

Principal Equipment, Materials and Engineers

Air-colled Walls, above water walls	Bigelow-Liptak Corp., Detroit, Mich.
Ash Hoppers	Beaumont Mfg. Co., Philadelphia, Pa.
Automatic Blow-down	The Permutit Co., New York.
Boilers and Integral Economizers	Erie City Iron Wks., Erie, Pa.
Boiler Feed Pumps	Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Breeching	Fox River Boiler & Sheet Iron Works, Aurora, Ill.
Chimney	M. W. Kellogg Co., New York City.
Coal Handling Equipment and Water Screen	Chain Belt Co., Milwaukee, Wis.
Combustion Control	The Hagan Corp., Pittsburgh, Pa.
Crane	Scully Steel & Iron Co., Chicago.
Excess Pressure Governor	The Fisher Governor Co., Marshalltown, Iowa.
Forced and Induced Draft Fans	Buffalo Forge Co., Buffalo, N. Y.
Forced Draft Air Ducts	Schlafer Hardware Co.
Feed Water Regulators and Pressure Control Valve	The Swartout Co., Cleveland, O.
High Pressure Piping and Erection	Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Pressure Regulator	The Mercon Regulator Co., Chicago.
Steam Flow Meters	Republic Flow Meters Co., Chicago.
Soot Blowers	Vulcan Soot Cleaner Co., DuBois, Pa.
Steam Turbo Generator	Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Stokers	Westinghouse Elec. & Mfg. E., E. Pittsburgh, Pa.
Stop-and-Check Valve	Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Superheaters	The Superheater Co., New York City.
Surface Condensers	Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Switchboard	General Elec. Co., Schenectady, N. Y.
Valve	Walworth Co., Boston, Mass.
Water-Cooled Walls, Drake Non-Clinkering Furnace	Block Co., Inc., New York City.
General Contractors	C. R. Meyer & Sons Co.
Consulting Engineers	Orbison and Orbison, Appleton, Wis.

Folke Becker Succeeds Wm. Eibel

Mr. Eibel, for the past twenty years treasurer and manager of the Rhinelander Paper Co., Rhinelander, Wis., has resigned to accept a position as secretary and treasurer of the Fir-Tex Insulating Board Co., Portland, Ore.

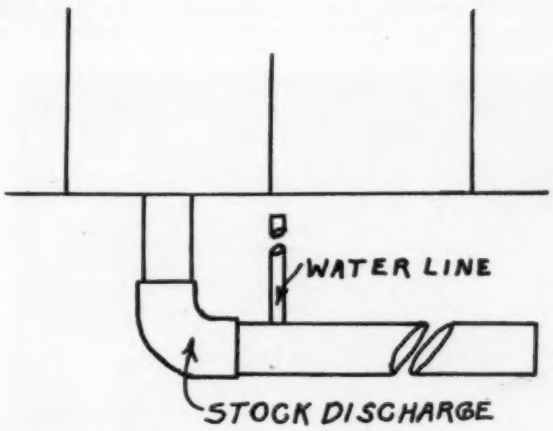
To succeed Mr. Eibel, the board of directors has appointed Folke Becker, for the past three years general superintendent of the plant. Prior to coming to Rhinelander, Mr. Becker was general manager of the Westfield River Paper Co., Russell, Mass. Under his direction, the latest and most modern machinery has been installed in the Rhinelander plant for the production of high grade glassine and greaseproof. Lewis Dozler, formerly with the Westfield River Paper Co. has been appointed as superintendent to succeed Mr. Becker.

John A. Manley, for the past three years, manager of sales development for Fairbanks, Morse & Co., Chicago, has been elected vice president in charge of sales. Mr. Manley, whose career has been one of rapid advancement in the business world was formerly manager of accounts for the nationally known advertising agency of Henri, Hurst & McDonald also of Chicago. In his connection with advertising work, Mr. Manley made a detailed study of the problems of industrial business development and it was the result of this work that brought him into the Fairbanks-Morse organization.

Practical Helps for the Mill Man

Saving Time in Emptying Beater

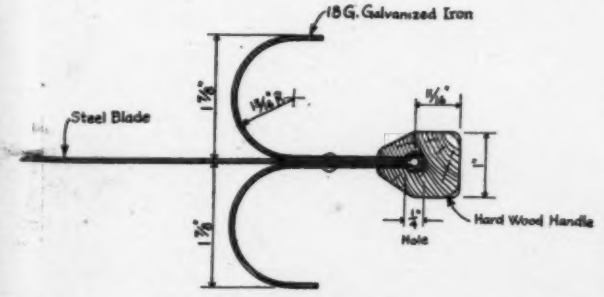
TO DISCHARGE the stock from one beater in the beater installation to the stock chest in a well-known paper mill, required a discharge pipe with only a small amount of drop in a long horizontal section of the line. The line was 12" diameter pipe, but when the valve of the beater was pulled it was a common occurrence for the stock to lodge in the pipe, and considerable time was lost in the dumping operation. Fresh



water added in the tub at the time of discharging the contents of the beater aided somewhat but in no way was satisfactory. A two-inch low pressure water line was then tapped into the top of the 12" discharge line in the horizontal section nearest the beater installation. The installation of this low pressure line and use of same during the dumping of the beater has eliminated the former problem. Just previous to pulling the valve in the tub, the beater man opens the valve on the low pressure line permitting the water to flow into the discharge line from the beater. This flow of water is continued throughout the entire dumping operation and by properly diluting the stock during its passage through the line to the stock chest has effected a considerable saving of time in emptying a beater, and has practically eliminated any tendency of plugging during the operation.

Calender Roll Scraper

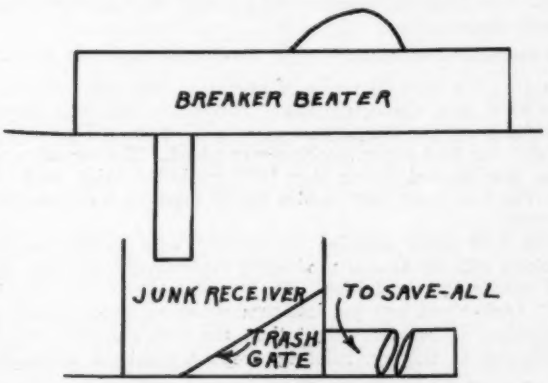
ONE of the requisites for a good finish for paper is clean calender rolls. In the operation of calenders, the rolls often become encrusted with material that impairs proper



functioning of the equipment. In the April 1928 issue of the National Safety News was described a simple and inexpensive device suitable for scraping and cleaning dirty rolls. The scraper consisted of a hardwood handle, guard, and blade. The guard was made of 18 gauge galvanized iron and was formed in such a manner that it automatically was held in the slot of the handle and at the same time protected the hand of the operator. The blade was of 18 gauge steel and was inserted in the guard where it was held only by friction. Such a method of inserting the blade permits any blade to be changed readily, if the scraper was to be used on various diameter rolls, or should a blade become caught during the use of the scraper for any reason, it would pull out of the guard without endangering the operator's hand. No blade should be sufficiently long to permit it when in the operating position to be caught in the nip of the rolls. The device described in the National Safety News and as illustrated used a steel blade with a width of 3¼" and an over-all length of 5¼", while the blade, guard, and handle had an over-all length when assembled of 6¾" and an over-all width of 4½".

Stock Recovery Scheme for Breaker Beater Clean Ups

TO RECOVER as much of the desirable stock contained in a large breaker beater at the time of clean ups was the objective of one paper maker. The breaker beater had been so located that it was possible to construct a vat on the



floor below, and to equip the vat with a trash gate in such a manner that as the material was washed out of the breaker beater on the floor above, it entered the vat outside the trash gate. All desirable stock passed through the gate and was piped to the save-all installation where it was recovered and utilized in the manufacturing process. The rejected material, after the beater had been completely cleaned, could then be easily raked from the vat. The vat or pit in this installation was made about 8 feet square and had a depth of approximately 4 feet. The trash gate was made with suitable wood strips with slots between the strips of about ½" in width. The amount of good stock saved through this installation has been very satisfying. At the same time, the removal of junk from the breaker beater has been simplified.

It is reported in the Chemiker Zeitung that a Berlin chemist, Franz Franck, has produced a paper which does not burn when heated to temperatures as high as 700 degrees C., and which further is a very bad conductor of heat. The new paper is not produced by a simple impregnation or mixing with asbestos or other incombustible non-cellulosic material. The method employed is not divulged, but it is stated that the celulose fibers are submitted to chemical action while in the beaten state, and that microscopic examination of the finished paper reveals no trace of the treatment.

Port Huron Mill Adds New Machine

Development from Early Pulp Mill to Present Five Machine Pulp and Paper Mill

IN 1888, a small group of business men assembled for a meeting in the First National Bank at Port Huron, Mich. to consider the advisability of erecting a pulp and paper mill. Dr. Mitscherlich, a German chemist, had only a short time before invented a process for producing a high grade pulp from wood. This process according to information at the disposal of the business men showed unlimited possibilities. Wood was cheap and easily obtainable. Likewise, laboratory demonstrations showed that a quarter of a million or more per year might be made on an original investment of only $100,000. Therefore, while the iron was hot, it was concluded to erect a mill upon a site of 12 acres which had been secured on Black River. A corps of German engineers were employed to start the new enterprise. However, it was left to the early pioneers of this industry to develop practical means of producing the pulp, rather than collecting the fortune which they had previously considered at the outset of the project.

The plant began operation in March, 1889, and under the leadership of O. L. E. Weber, then a young engineering graduate of the University of Michigan who had been employed to displace the foreign experts, it made steady progress. For 20 years, or until 1908, the mill functioned without a shut-down.

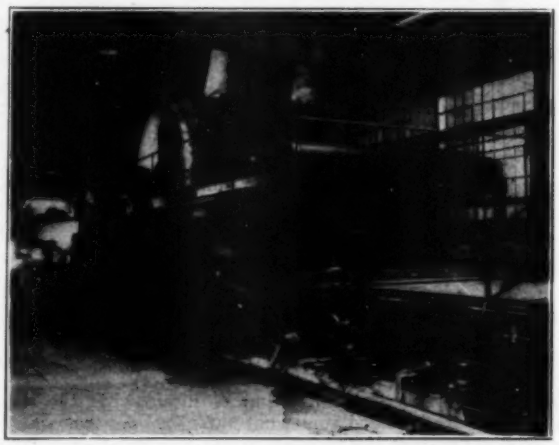
Manufacture of Light Weight Specialties Begun in 1911

During the first 20 years of operation, the mill operated only as a pulp producing plant. When the mill shut down in 1908, it was for the purpose of rebuilding and enlargement. In 1911 the first paper machine was added. The second machine was started during May 1922, while the third machine followed two years later, and a fourth machine was installed in 1925.

The first paper machine was a 120" trim Beloit Yankee machine with an annual productive capacity of 3,000 tons of fine tissues and specialties. The second machine was also a 120" Yankee and was put into production on machine glaced specialties of heavier weight than the first machine. Such specialties as waxing, twisting, creping, manifold, envelope, bread wrap, fruit wrap, meat wrap, shoe wrap, bag, fire cracker, soap wrap, dry proofing, die wiping, foil backing, drinking cup and coffee bag include only a few of the papers produced on this second machine, which, as the first, was in position to produce about 3,000 tons annually.

The Installation of Cylinder Machines

Both the third and fourth machines to be installed were cylinder machines. The first of the cylinder machines was



120 inch Yankee machine from wet end

capable of increasing the total annual production to aproximately 9,000 tons. Specialties, such as envelope, tympan, drafting, embossing, stencil, sulphite manila, cover, document tag, index bristol and tough check were produced on this machine. The second cylinder machine, put into operation in 1925 with an upright dryer section, was installed to produce building, trunk wrap and other coarse specialties.

Aeroplane view of plant of Port Huron Sulphite and Paper Co., Port Huron, Michigan

Plant Enlarged to Include Fourdrinier Specialties

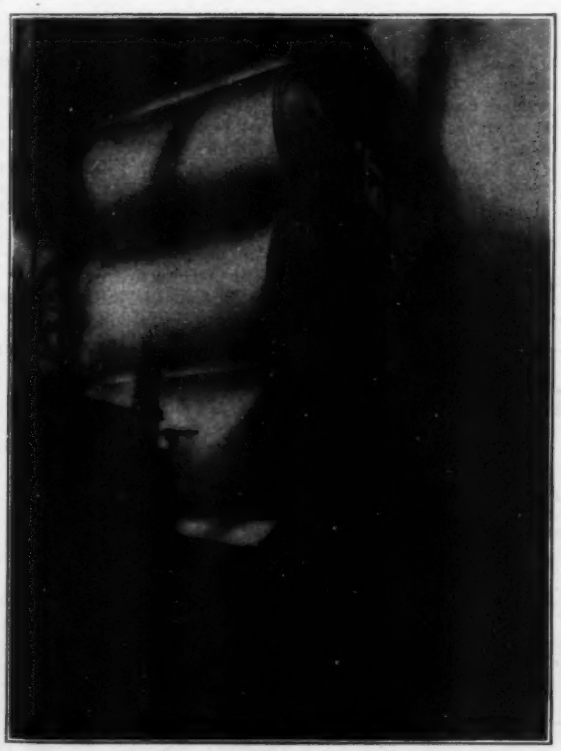
With the business of the plant ever expanding, it became necessary in 1927 to lay plans for increased production. It was decided, after a careful study of markets, to extend their line of products to include fourdrinier specialties. With such an installation, the mill would be equipped to manufacture Mitscherlich specialties on any one of the three common types of paper machines—Yankee, cylinder and fourdrinier, and to produce these specialties in weights ranging from 10 pounds as in the case of tissue to 225 pounds as in case of some of the heavier specialties. Therefore, with the decision made outlining policy, it became necessary to put the plans into effect.

In effecting the plans, a new building 80x300 feet was erected and the requisite equipment installed. All equipment was carefully chosen to conform with the prescribed standards. Beaters were chosen by test. Two beaters were placed in actual operation in the plant and comparative tests made upon their operating efficiency, both from the standpoint of power consumed and the quality of paper produced. Beaters of 2,000 lbs. capacity were specified for the installation.

Specially designed stock chests were constructed to permit complete emptying when changing colors. The chests were, likewise, equipped with double agitators to insure mixing of the stock as it is delivered to the paper machine. Likewise, flow boxes to the jordan and paper machine included the incorporation of ideas from practical men in the plant in their design. Such design should make it possible to control the weight of finished product very closely.

A mammoth Junior Precision Jordan driven by a 200 h.p. synchronous motor was installed to meet the requirements of refining the stock after beating and prior to its entrance on the paper machine. This jordan is equipped with high speed, heavy duty, anti-friction bearings.

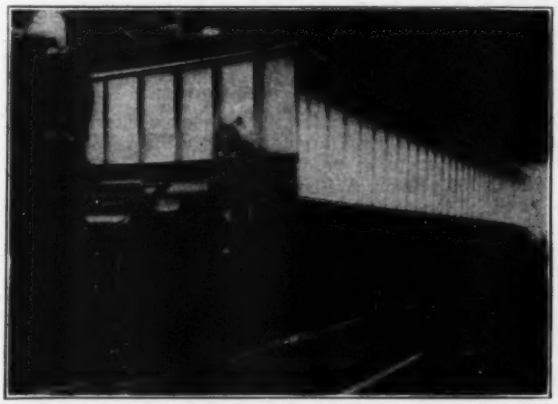
A new type of fan pump, designed for uniformity of discharge and low power consumption, was installed to deliver the stock to an installation of two Bird screens. The screen installation has been made with plenty of excess capacity and with the screens equipped with finer cut plates than usual to insure most efficient results. The screens were located to prevent any possibility of foaming or formation of slugs in the stock as it discharges into the head box of the paper machine.



Vertical dryer installation of cylinder machine

The Latest Fourdrinier Machine

The paper machine installed as the fifth machine in the production of Port Huron Sulphite Pulp and Paper Co. specialties was a 132" Beloit machine with a 120" trim. The fourdrinier part of this machine was equipped with a Beloit slice, a 70 foot wire, and a suction couch roll with the fourdrinier part adjustable at the couch end. Another interesting feature of the fourdrinier part was the shake. The shake was designed to permit control over the number of strokes as well as the length of the strokes, thus making it possible to acually control the formation of the sheet.



Dry end of recently installed 120 inch fourdrinier, showing hood and Sheahan rope carrier

The press part of the machine included a suction press, a second press with granite top roll, and a third press with a gun metal top roll. A set of smoothing rolls were also installed just before the dryers.

The vacuum requirements of the suction couch and press installation has been met through connections to an Ingersoll-Rand vacuum pump. This pump is driven by a synchronous motor.

The dryer section of the machine was designed to include a size press. Therefore, the dryers, split in two sections, included 18 dryers 48" in diameter in the first section, followed by the size press, and then the six dryers in the second section. Cooling rolls, two calender stacks, an Aldrich reel, and a two-drum winder made up the rest of the machine.

Unloading pulpwood from company steamer, W. J. Crosby

A Penberthy dryer system using exhaust steam from the engine has been installed on the dryers. The dryers are also equipped with a circulating oil system which has eliminated haphazard hand oiling. To make the dryer arrangement

complete it has also been equipped with a system of Sheahan roper carriers, and hooded with a well designed hood.

The machine has been provided with two stacks of calenders, one a 6-roll stack and the second an 8-roll stack. The calenders are equipped for producing water finished or steam finished papers.

The machine was, as mentioned previously, also equipped with an Aldrich reel and a two-drum winder to handle the paper at the dry end.

An interesting drive has been installed. The drive consists of an Elliot twin engine giving a speed range of 100 to 600 feet per minute. Spiral gear in-drives are driven from a line shaft. There is not the conventional line shaft. The auxiliaries are driven by motors.

In determining the speed for which the new machine should be designed, it was necessary to consider the wide range in weights of paper to be produced—paper ranging in weight from 20 to 100 pounds. With such a wide range of weights, it was essential to equip the machine with a variable speed drive that would uniform results over the necessary speed range. Uniform speed control is absolutely essential for the production of uniform weights of paper on the machine. The maximum speed of the machine was specified at 700 feet per minute.

Auxiliary Equipment

A North save-all and Cameron white water pumps have been installed to recover stock from the white water. The bleach plant capacity has been increased by the addition of another Biggs rotary bleacher, and two Oliver filters. The filters were installed to furnish slush stock to the beaters.

In the design and erection of the new building, space was allocated to the laboratory and testing departments, as well as for vaults for storing a large stock of aniline dyes, and space for future expansion and development.

The laboratory is completely equipped with testing apparatus, and one of the main functions of the laboratory staff is to test the paper for quality and to record the results.

Among the tests commonly made are basis weight, moisture content, Mullen, Schopper, Elmendorf, and caliper.

Careful inspection is likewise required of every roll as it comes from the machine for winding, and samples are inspected for cleanliness, formation, etc.

With quality of finished product, the predominant thought throughout the entire development of the concern, it is easy to appreciate why the demand for the specialties as produced by Port Huron Sulphite through the years has increased so steadily.

At a meeting of the board of directors of the Boston Woven Hose & Rubber Co., October 15, J. Newton Smith, for a number of years vice president and treasurer, was elected president of the company to succeed the late George E. Hall. Mr. Smith was retained as treasurer and Arthur C. Kingston, formerly director of sales, was elected vice president.

The Fidalgo Pulp Systems

The Technical Economist Corporation, 40 Rector Street, New York, has issued Bulletin 301 entitled "Fidalgo Dried Pulp and What It Means to the Papermaker", which is a description by R. D. Kehoe of a new system of shredding, drying and baling pulps. After the pulp is delivered from a Kamyr high pressure wet machine, it is shredded on to a wire conveyor while 55 to 60 per cent dry. The shredding process leaves it in a fluffy fibrous condition which permits rapid drying with the minimum expenditure of power. The shredded pulp is carried by the conveyor through a tunnel dryer supplied with steam coils or heated air.

The Fidalgo drying system is said to have a decided advantage over pulp dried on a cylinder dryer in that the strength factor of the fibers are fully retained. Another point in favor of pulp dried by the Fidalgo system is that it may be beaten more rapidly and efficiently than wet pulp, though supplied in air-dry condition.

According to the bulletin, the Fidalgo drying systems baling method has been improved in many respects of late. Owing to the light fluffy nature of the material, the problem of pressing and baling Fidalgo dried pulp presented difficulties similar to those that are encountered in the pressing and baling of raw wool stocks, which has been a problem of press manufacturers for years. But now it is said the Fidalgo bale has been improved to a point where considerable tonnage is being shipped by rail and water, either strapped or wired into a secure package that prevents breakage or loss.

The method and apparatus for drying, shredding and baling pulp by the Fidalgo system is protected by patents in the United States, Canada and all foreign countries. Bulletin 301 of the Technical Economist Corporation gives a clear and concise description of the various steps in the production of Fidalgo dried pulp, the text being helped out with charts, diagrams, sectional views and photographs of installations. Copies of this bulletin will be sent gratis by the Technical Economist Corporation on request to all interested.

Fitchburg Duck Mills Install 300 Inch Loom

Keeping step with the progress of the industry which they serve, there is a growing tendency on the part of manufacturers of paper mill machinery and supplies to create that which will produce paper in greater width, thus increasing production with a relatively low increase in manufacturing cost.

An example of this development is the recent announcement of a 300 inch loom which produces a canvas dryer felt 288 inches wide. This loom was recently installed by the Fitchburg Duck Mills, Fitchburg, Mass. For the past eighty years this company has supplied paper mills with felts of a high standard of quality and workmanship, and this recent installation is in keeping with its policy to meet the demands of the industry. Engish weave felts are now, therefore, being furnished by Fitchburg Duck Mills in two, three, four and six ply, ranging in width from 60 to 288 inches.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of September 30, 1928

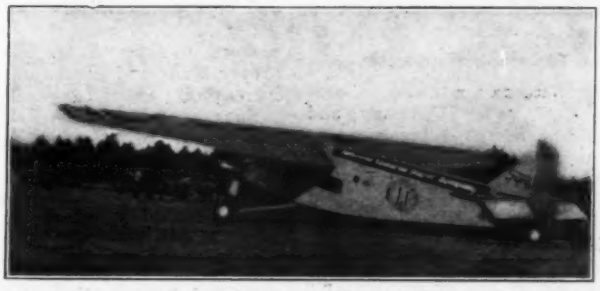
Participant	Mill	Rate	Participant	Mill	Rate
Kimberly-Clark Co.,	Neenah	0	International Paper Co.	Livermore	.33
International Paper Co.	Riley	0	International Paper Co.	Winnipiseogee	.37
U. S. Gypsum Co.,	Gypsum	0	Robertson Paper Co.	Montville	.39
Kimberly-Clark Co.	Atlas	.05	Union Bag & Paper Corp.	No. 5	.40
Upson Co.	Board	.14	Union Bag & Paper Corp.	Allen	.45
International Paper Co.	Webster No. 9	.14	Lincoln Pulp & Paper Co.	Lybster	.63
Gardner & Harvey Co.	No. 3	.16	Lincoln Pulp & Paper Co.	Lincoln	.70
Adams Bag Co.	Chagrin Falls	.19	Mead Pulp & Paper Co.	Peerless	1.02
Gardner & Harvey Co.	No. 1	.20	Union Bag & Paper Co.	Fenimore	2.06
Gardner & Harvey Co.	No. 2	.25	Northwest Paper Co.	Brainerd	2.17
Bergstrom Paper Co.	Neenah	.27	Lincoln Pulp & Paper Co.	Sulphite	2.64
Group A—Nekoosa Edwards Paper Co., Combined Mills		.50	Group B—International Paper Co., Niagara Falls		.50

Paper Company Launches Aircraft

Nepco Plane Takes Part in Aeronautical Maneuvers at Dedication of Tri-City Airport

IT HAS been stated that the present buyers' market is the result of applied science to the problems of production far beyond the ability of the consumer to make use of the commodities produced. The present and future need, therefore, demands that people must be educated in how to make use of the products developed by engineering skill.

In line with this idea of making the people in 42 states more familiar with its products through the medium of 4500 jobbers and salesmen, the Nekoosa Edwards Paper Company, Port Edwards, Wisconsin, has purchased a giant Ford trimotored cabin monoplane, which has been christened "Nepco". This "palace of the air" will be used primarily for the purpose of carrying customers and sales force of the organization to and from the local mills of the company, according to John Alexander, vice president and general manager of the company. It will make trips betwen the Tri-City airport and Chicago, Cleveland, New York, Cincinnati, St. Louis and as far west as Denver on company business.



"Nepco", the giant Ford tri-motored cabin monoplane of the Nekoosa-Edwards Paper Company

Airport Ideally Situated

That industrial community in the heart of Wisconsin, comprising the cities of Wisconsin Rapids, Port Edwards and Nekoosa, has just established an airport, which is conceded to be the finest in Wisconsin and one of the best flying fields in the United States. This valuable addition to the facilities of that section is indeed a boon to the paper industry as this point is surrounded with many of the large paper mills of the country.

The Tri-City airport was dedicated Saturday and Sunday, October 20 and 21, 1928. This auspicious event was accompanied with impressive ceremonies, the dedicatory address being delivered by Governor Fred Zimmerman, and the celebration was one of the most spectacular and outstanding events in annals of commercial aviation.

There were thousands of visitors from Wisconsin and surrounding states; there were notables of the aeronautical world, whose names are synonymous with progress in aviation; there was aircraft of every description giving maneuvers and formations. A squadron of army planes gave the throngs some real thrills—loop-the-loops, nose dives and other breath-catching tactics. Not all of those present were content to partake of such thrills from afar, for during the ceremonies many were persuaded to leave the solidity of the earth for the experience of an expedition in the air, making flights 2000 feet high and getting a birds'-eye-view of beautiful Lake Nepco, just south of the airport.

The port was established by the Tri-City Airways, Inc., comprising interests from the cities of Wisconsin Rapids, Port Edwards and Nekoosa. It is located two miles south of the center of Wisconsin Rapids, almost directly across the river from Port Edwards and four miles by air from Nekoosa, The field covers 320 acres, 140 of which are now ready for immediate use. The soil is sandy, making it an all weather field. A hangar of concrete and steel construction has been erected where eight planes of average size may be housed, or two large planes the type of the Nepco.

Many prospective sites were inspected before the present field was decided upon. The location is the most ideal one that could be found, as it is not only the actual geographical center of the state, but air maps show it to be on a direct line from Chicago to Duluth, from Manitowoc and Appleton to St. Paul and Minneapolis and from Ashland to Madison and Beloit. It is perfectly located as a stopping point for air transportation. Not so long ago, news of a prospective railroad line caused an inflow of commercial activity. Today, it is predicted the highways of the air mark the path of industrial development and transportation centers of the future.

The Nepco Plane

The new Nepco plane which participated in the dedicatory maneuvers is one of the finest ships in the air. It is built entirely of duralumin, a non-rusting, non-corroding, copper-aluminum alloy as strong as steel, but only one-third as heavy. The plane stands more than 12 feet high, with a wing spread of 74 feet and a length of 49 feet. The distance between the two wheels of the landing gear is more than 16 feet. Safety has been the uppermost thought in the construction of this plane. There are three Wright Whirlwind motors instead of the customary one, totaling 660 horsepower. Each of the motors is a nine cylinder radial engine, of the air-cooled type. All danger of forced landings has been practically eliminated in this Ford plane because it can continue to fly with only two motors working, carrying a full load at a maximum altitude of 5,000 feet. The plane may be landed with only one motor in service; therefore, the hazard of a trip in such a craft is practically no more than that of riding on a train or in an automobile.

The Nepco is equipped to carry twelve passengers with two men in the pilots' compartment, allowing 35 pounds of baggage for each passenger. The cabin is divided into four distinct compartments and there is a heating system for cool weather or high altitudes. The interior is spacious and luxurious, beautifully upholstered and with every convenience of the finest Pullman car.

To pilot this super-craft, the Nekoosa-Edwards Company has secured Captain Leslie G. Mulzer, aeronautical engineer. Captain Mulzer is an ace among flyers and has devoted the greater part of his life to aviation. He has an enviable record of achievements as an aviator in the army during the war and has since been engaged in commercial aviation and the promotion of aeronautics.

Captain Mulzer recently conducted a survey for an airmail route between Chicago and Duluth, Minn., and is very enthusiastic over the prospects of Wisconsin Rapids as probable air-mail station. He believes it to be the logical point for a Government radio beacon station and meteorological station.

The New York Industrial Safety Congress will meet at Syracuse, N. Y., December 3 to 6, inc., 1928. An interesting program is being prepared and Samuel Pruyn, Regional Director of New York State Paper and Pulp Section, National Safety Council, is arranging for a paper and pulp sectional meeting in connection with the congress.

Northern New York Supers Meet

Practical Demonstration of Verigraph and Good Papers Feature Niagara Falls Meeting Attended by National Officers

THE Northern New York Division of the American Pulp and Paper Mill Superintendents Association held a fall meeting at the Niagara Hotel, Niagara Falls, New York, Saturday, October 13, 1928. Its attendance was marked by the large number of paper and pulp mill representatives present including sixteen visitors from other regions—among them being Benj. T. Larrabee, national president of the association, Robert L. Eminger, national secretary and treasurer, and national vice presidents Carl Magnus, James G. Ramsey and Tom Harvey. Special arrangements were carried out for the entertainment of the ladies.

Practical Demonstration of Verigraph Witnessed

Following the registration on Saturday morning, a considerable number visited the Cliff Paper Company and witnessed a practical demonstration of the automatic control of moisture as effected through the use of the Verigraph, manufactured by the Atlantic Precision Company, Boston, Mass. This device is the development of a radio type instrument for detecting, recording and automatically correcting moisture variations in the moving web of paper, invented by Albert Allen and described in his presentation of the subject at the annual meeting of the superintendents association held in Pittsfield, Mass., last June. Mr. Allen's paper prepared with the collaboration of Prof. J. G. Callan, was published in full in the June, 1928 issue of THE PAPER INDUSTRY. The inventor presented his paper again as a part of the program of the afternoon session, followed by an active discussion of the applications and possibilities of the instrument.

Luncheon was served to the superintendents and their wives in the Ball Room of the Niagara Hotel, and the business session was then called to order in one of the adjoining rooms.

Business Session

Chairman Levi A. Fralick opened the meeting with a short talk in which he reminded those present of the condition of the paper business today, demanding that superintendents must be alert to keep their mills running in the most economical way and save them from the class of those which shut down temporarily or permanently.

The Felt Maker's Viewpoint

The relation of the felt manufacturer to the paper maker and how the former can best serve and meet the latter's requirements was treated in an excellent paper by William H. Lee, general manager of the Lockport Felt Company, Lockport, N. Y.

Believing that the part the felt plays in the making of paper is one of the most important of the whole operation—with due respect to wire makers and other, it was the speaker's opinion that the closest relations should exist between the felt maker and the practical men in the paper mills. First hand information from the superintendent or the man directly responsible to him, direct to the felt maker about any results that are being sought insofar as the felt is concerned, is one of the best assets the felt maker can obtain in order to construct the proper felts.

An incident in support of this was cited where bottom felts being furnished for a board machine were specified for one length at one time and twenty feet longer the next time and always for the same kind of felts. The felt maker's attention was called to the fact that the longer felts did not give service equal to the shorter felts, and after arranging a personal discussion between the felt representative and the paper mill superintendent, as to the problem involved, it was learned for the first time that when the long felt was used, the second press felt was eliminated, and the one felt performed the functions of the making felt and also the second felt. As soon as this fact was learned, the felt manufacturer knew that two differently constructed felts were needed to operate under the two varying conditions, which worked out to the benefit of the paper mill and a great saving in felt cost.

In calling attention to the fact that all the eleven felt mills now operating successfully in the United States have been making felts for over thirty years and have progressed and kept pace with the rapidly changing conditions of the paper mills, it must be conceded he said, that the felt makers in America are efficiently equipped to furnish the proper kinds and grades of felts to meet the paper maker's increasingly changing conditions.

Suggestions from the Felt Maker—Mr. Lee concluded his paper with the following suggestions from the felt maker's viewpoint:

Give the felt a chance. It is a carefully designed and reliable adjunct to the paper machine. Don't lay all ills connected with the paper trouble onto the felt.

A good felt can be ruined the first five minutes on the machine by improper handling. Run the felt at least once around in a slack condition before wetting up and then draw out to size and shower slowly. All the life can be taken out of a felt by drawing it out to size to rapidly.

Never tear the edges off the felt. The edges are designed for strength and by tearing them off, the felt is immediately weakened. Order your felts the correct width for your machine.

Don't put felt marks in your paper, because if you do not put them in, you will not have to take them out.

Use the wet felt to pick up the stock and carry the sheet, and don't expect it to take out all the water. Depend on the top and press felts for this result, for this is what they are designed for.

Pitted rolls will wear out a felt quicker than anything with the possible exception of improper suction boxes and too much suction.

Rolls not one hundred per cent true will wear out a felt in the uneven place. Stock wound around the rolls is equally as bad.

By getting any oil or grease (no matter how small the amount) on the felt, while putting it on the machine, will cause the felt to blow.

Worm and spread rolls should be properly adjusted.

Driven cylinder moulds are alright when operating one hundred per cent synchronous. If one cylinder is a fraction of one per cent off, this condition is ruinous to the felt.

Clean water is very essential, and don't expect the same amount of water from felts in the summer months as you do the rest of the year unless you treat your water or use water from springs. During the summer months water gathers organic matter from the streams and organic matter is ruinous to wool fibers.

Souring felts is not recommended unless absolutely necessary, but if necessary, do it with great caution. If your felts are not open enough, consult your felt maker.

Felts are too costly to be kept in a general store room. Keep them in a room by themselves where they cannot come in contact with oils, tools, tacks, brads, etc. The ideal felt room should be of wood, insulated with tarpaper, vermin proof, with plenty of light. Moths and most vermin work in the dark. Never keep felts in a concrete room, at least so they come in contact with concrete walls. If necessary to keep in a concrete room, keep the felts on wooden slat shelves. The room should be arranged so it can be made air tight and fumigated at least once every two weeks, especially during the summer months, by burning sulphur.

Developments in Fourdrinier Wires

A brief discussion of Mr. Lee's paper was followed by the next subject on the program being "Developments in Fourdrinier Wires", by Mr. Buell of the Lindsay Wire Weaving Co., Cleveland, Ohio.

M. Buell discussed some of the more recent problems being presented to both the paper maker and the wire manufacturer. Parallel developments are being made in each of these two industries. One of the most outstanding developments has been in the speed and width of paper machines with the result that the high speed 234 inch paper machine is not only a practical success, but is becoming more and more the most popular size for the manufacture of news, kraft and similar papers. Ten years ago, there was not a single machine of this size in operation on this continent, while today, there are over forty in Canada alone. Paper machines 270 inches wide are in successful operation and preparations are being made at the present time for the manufacture of wires 304 inches wide. The wire industry must keep pace with this increase in width and supply wires to operate at whatever speed is found practical for the manufacture of paper.

During the speeding up of the paper machines, much has been done in the mills to improve conditions under which wires operate and much has been accomplished in the plants of the wire manufacturers in their efforts to produce wires which would last as long or longer at present speeds as wires did previously running hundreds of feet slower. Wire drawing and annealing processes have been improved to leave more and more life in the wire. At the present time, Mr. Buell said, the most suitable metals are phosphor bronze and low brass of improved quality.

Problem of Hanging to Suction Box—One of the biggest problems under present conditions of operation in the paper mills, is the tendency of wire to hang or freeze to the suction boxes. At slow speeds it was ordinarily possible for the shake to keep the wire moving over all the boxes, or all except the last one or two boxes, and the resultant grooving had relatively little effect on the life of the wire at those speeds.

As the paper machines have increased in width and speed, the tension on the fourdrinier wire and the load it is obliged to carry have increased correspondingly. The result is freezing or hanging of the wire to the suction boxes, and once the sharp knuckle of the new cloth have cut grooves into the tops of the boxes—no matter how carefully they were planed while the wire was being changed—satisfactory operation and service from the wire is seriously endangered.

Non-grooving Wires—Realizing this condition, the wire manufacturers set about to develop a wire which would not hang to the suction boxes on paper machines not equipped with oscillating device. The result was the "non-grooving" or "zig-zag weave" wire, in which the rows of knuckles are inclined at a slight angle, first in one direction and then in the other alternately through the length of the wire. In this manner, the warp knuckles are slightly staggered and these worn surfaces constantly overlap, resulting in the distribution of uniform wear over the width of the suction boxes, and no grooving or ridges develop as long as this "zig-zag" effect remains in the wire.

Longcrimp Wires—Except in some mills, the solution of the grooving problem was only temporary, as speeds were being increased very rapidly so that wires wore out more quickly and with the increased load on the wire, hanging again became a problem. The "Longcrimp" was introduced to meet this condition. Because of the nature of the weave, more wearing surface is presented to the suction boxes, and with more wire to wear away, longer wire life can normally be expected. This type of weave has been found particularly suitable for the manufacture of news, kraft, manilla and similar papers.

Spiral Weave Wires—For this group of mills, the non-grooving wire which has been more recently developed, known as our patented "Spiral Weave" is worthy of consideration. In the "Spiral Weave" the warp wires and the corresponding rows of warp knuckles are inclined at a slight angle throughout the entire length of the wire and the wire is so made that the edges run straight and true. In this weave the non-grooving effect cannot pull out, regardless of the tension, and although special precautions must be taken in trimming and in handling the wire on the machine, this "Spiral Weave" solves the hanging problem very well under certain conditions. On very wide machines running at high speeds, there is a tendency for this wire to crowd to one side of the machine and this feature must be taken into consideration in specific installations.

Wire Standardization Demanded—The discussion on Mr. Buell's topic took the form of inquiry as to why the wire manufacturers do not adopt a standard on wire mesh. Complaint was made that a forty or seventy mesh wire from one company has more wires to a given width than in the same specified mesh from another company. Reply was made that ninety per cent of the wire manufacturers have agreed on a standard mesh about five or six years ago, and it is just a matter of time when as the different manufacturers having thousands of dollars worth of reels on hand replace them in due course, the replacing will be done by the adopted standard mesh.

A strenuous plea was made for rapid standardization. The papermaker depends on the water going through the wires to mark the sheet, and when the mesh is not the same as before, the mark is different. A check-up on wires should be made when they are received at the mills. A calibrated glass is available for such a purpose and the wire manufacturers are glad to co-operate.

Mr. H. M. Eastman of the Paper Makers Chemical Corporation read a paper on Size and this was followed by a brief discussion.

Manufacture of Sulphite Pulp

An interesting paper on Sulphite was presented by A. G. Natwick, general superintendent, Lincoln Pulp and Paper Co., Ltd., Merriton, Ontario. He outlined a few of the recent developments in the production of a greater variety of pulps than the so-called "strong" and "easy-bleaching" which exemplify the modern trend of progress in sulphite manufacture. Mills are now producing pulps specially suited to news, greaseproof, book, bond, tissue or rayon manufacture.

News sulphite is so handled in the digester in that it is unnecessary to treat it in beaters or jordans to any great extent. The usual paper making procedure is to mix the sulphite and groundwood, color, size and alum in a mixing tank and pass through a jordan to machine chest. Different mills produce fiber of different characteristics for news but I believe a long fairly soft pliable fiber gives the best results. Greaseproof pulp on the other hand must be tough and strong, as sheets requiring maxium hydration such as greaseproof, glassine and manifold are made with this pulp. For a good sheet, the fiber must retain its length under the severe beater treatment given. Sulphite bonds and similar sheets should be hard and snappy also good bursting strength and toughness are important. A pulp which hydrates quite readily and which holds its strength over a long beating period is best adapted to these grades.

It is interesting to note that in the past few years a new pulp has been developed for the making of rayon silk. This pulp must have a very high x-cellulose content and is therefore treated more drastically ni the digester. In bleaching, great care must be taken to prevent formation of oxycellulose. Therefore, a low temperature, high-density and two stage bleaching system has been developed for this pulp. Due to the drastic cooking treatment, this pulp has a very short fiber and does not compare with the better known pulps used in the manufacture of high grade papers.

As a result of the success of the two stage bleaching process in rayon pulp manufacture, it is being adopted by the pulp and paper industry for the production of high grade bleached sulphite. In this process, the screened pulp is thickened to about 16 per cent consistency, intimately mixed with the bleach liquor, then passed into a tank. Air is blown through the mass in this tank to remove carbon dioxide gas; no other agitation occurs. The semi-bleached

pulp is continuously withdrawn from the bottom of the tank, diluted with water and washed on a continuous filter. The thickened pulp from this filter is again mixed with bleach liquor and passed into the second stage tanks. Here, the bleaching is completed, and the pulp withdrawn from the bottom of the tanks continuously to the bleach washers. 75 per cent of the bleaching is done in the first stage and 25 per cent in the second stage, all at temperatures below 92° F. Much coloring matter and dirt are removed by the intermediate washing and the bleach consumption is very materially decreased. The result of this process is an exceptionally clean, strong, bleached sulphite.

In order to predict any particular qualities in the manufacture of sulphite pulp, it is necessary not only to study the effect of different procedures in the mill, but to reduce as far as possible the variables with which the pulp manufacturer is beset.

S O Recorders—The latest and perhaps best S O recorder which is a definite contribution toward reducing variables in sulphite manufacture, said Mr. Natwick, is an electrical instrument built on the wheatstone bridge principle, employing small electrical currents and resistences to measure the concentration of the gas coming from the sulphur burner.

Chip Weighing and Packers—The charge of chips introduced into the digester is actually unknown unless the weight and moisture content of them is known. Chip weighing devices have been made, but while some installations are in use, no universally acceptable apparatus has yet been designed. Much greater uniformity of the charge is now being attained by the use of chip packers, which enable a considerably larger quantity of chips to be put into the digester and a more uniform distribution of them.

Steam Flow Meters—The use of steam flow meters on sulphite digesters has done much to effect uniform cooking, and through study and investigation, the definite amounts of steam to be admitted during the different stages of the cook are determined and these investigations provide the information on which to base standard flow meter charts for the operator to follow.

Mr. Natwick then outlined the effects of seasonal changes in the sulphite mill necessitating a variation in operation over the twelve months of the year, stating that unless this variation is carried out definitely, a considerable difference will be noted in the quality of the pulp.

The Drying of Paper

Michael J. Argy, of the Argy Pre-Heating Corporation, Niagara Falls, N. Y., and superintendent of the Cliff Paper Company was asked to give the particulars of the new method of drying paper which involves the heating of paper prior to its passage through the second press with the idea of thereby removing a greater quantity of water and increasing the efficiency of the machine. An outline of the system as covered in a paper presented by Mr. Argy at the annual convention of the superintendents association in Pittsfield last June was published on page 459 of the June issue of THE PAPER INDUSTRY. Following a brief discussion of this subject, the meeting was adjourned.

A banquet and informal entertainment for the superintendents and their wives took place in the Ball Room of the Niagara Hotel, and the program was concluded with a special trip on the Illumination Special down into the Gorge at 9:30 in the evening which was enjoyed immensely.

Registration

R. J. Argy, Cliff Paper Co.; M. J. Argy, Cliff Paper Co.; W. J. Argy, Harmon Paper Co.; W. P. Argy, Argy Pre-Heating Corp.

J. E. Blosser, Scott Paper Co.; Wm. Brydges, Bedford Pulp & Paper Co.; J. H. Brougham, Foster Box Board Co.; C. F. Buss, Provincial Paper Mills.

R. M. Cameron, Canadian Paperboard Co.; A. E. Camp, Provincial Paper Mills; A. H. Carroll, O. M. Cornell, Erie, Pa.; F. M. K. Cushing, Thorold, Ont.

R. L. Eminger, Nat'l Sec. & Treas.

L. A. Fralick, Algonquin Paper Co.; H. F. Freas, Spaulding Fiber Co.; H. D. Frost, H. D. Tyler Co.

H. E. Hadley, Powers Regulator Co.; W. J. Hart, Noble & Wood Co.; Tom Harvey, Gardner & Harvey Co., National vice pres.; S. O. Heiser, Smeallie & Voorhees; A. Himes, Manhattan Rubber Co.; A. S. Hooper, International Paper Co.; H. A. Horstmann, General Dyestuffs Corp.

T. H. Ireland, Crane Co.

D. M. Kelly, Bloomer Bros. Co.; H. C. Kinne, Bagley & Sewall Co.

B. T. Larabee, S. D. Warren Co., National president; W. J. Livingston, Dexter Sulphite, Pulp & Paper Co.

Carl Magnus, Standard Paper Co. National vice pres.; J. F. McKenzie, Don Valley Paper Co.; C. H. Meyers, Crane Company.

M. V. Payck, Heller & Merz; G. M. Pomeroy, Warren Parchment Co.; R. W. Price, Niagara Paper Co.

J. G. Ramsey, Jessup & Moore Paper Co., National vice pres.; M. J. Redmond, Kalamazoo Paper Co.; H. W. Reed, Hinde & Dauche Paper Co.; F. J. Rooney, Upson Co.

P. W. Server, Oxford Miami Paper Co.; E. Simonson, Buffalo, N. Y.; J. D. Smeallie, Smeallie & Voorhees; A. C. Smith; R. W. Smith, Bird Machine Co.

K. E. Terry, S. D. Warren Co.; C. M. Thompson, Cliff Paper Co.

W. J. Westbrook, Alonquin Paper Co.; W. Weston, American Wringer Co.; J. A. Wiener, Oswego Board Corp.

S. E. Division Superintendents Visit Richmond

The Southeastern Division of the American Pulp & Paper Mill Superintendents Association met at the Richmond Hotel, Richmond, Va., October 26, 1928, to hold its annual fall meeting. There was a large attendance and the meeting was voted a very profitable one. Arrangements for the convention were made by B. K. Steadman, chief chemist at the Standard Paper Manufacturing Co. He was ably assisted by R. J. Sprang of the Champion Fibre Co., Wm. Brydges of the Bedford Pulp & Paper Co., and E. H. Neblett of the Standard Paper Manufacturing Co.

R. J. Sprang opened the meeting and acted as chairman during the round table discussion.

Hydration of Cellulose—In opening this subject for discussion, Mr. Sprang explained that at the last meeting of the Association in Lynchburg, this subject was brought up and the members had thought it of sufficient interest and importance to give it the spotlight at this meeting.

Many various and interesting definitions were given of the word "Hydration"; such as, "Wetting of Fiber", "It is some action on the intercellulor materials as well as on the fibers", "It is the atomic holding capacity of water in stock", etc.

The possibilities of using a color method of determining the freeness or slowness of stock was brought up; that is, the more highly hydrated the pulp is, the more dye it will absorb. Since slow pulp will absorb more dye than the free pulp, the measure of the dye would be a measure of the freeness or slowness.

A few of the pertinent questions which were asked are as follows:

1. What is fibrillation?
2. Does a dull or slow tackle induce fibrillation?
3. If you increased the consistency of the stock, would it hydrate faster?
4. What influence does the size and weight of the roll have on the question of freeness and slowness?
5. Does keeping stock on the acid side affect the equipment and create iron troubles?
6. On which side is there more power saving—alkaline or acid?
7. What effect has a slush pulp as against a dried pulp?
8. What are the relation of the terms, porosity, bulk, and absorbency, as applied in the manufacture of blotting paper?
9. Does acetic acid affect colors?
10. Which is preferable, the ball mill or the beater?

It was announced that in the near future a complete report will be mailed to all members of the association covering the discussion on hydration. It was agreed, however, by all present, that individual conditions played a large part in determining the correct answer to many of the problems submitted.

Election of Officers—Following the round table discussion, Carl Magnus, second vice president of the American Pulp and Paper Mill Superintendents Association, took charge of the meeting and extended to the members of the Southeastern Division greetings from President Larrabee on behalf of the National Association. Mr. Magnus made a short report of the executive committee meeting which was held at Niagara Falls in conjunction with the Northern New York meeting and advised those present that the next meeting of the National Association will be held at Wausau, Wis. the first week in June, 1929.

Officers elected for the ensuing year were as follows: chairman, Wm. Brydges, Bedford Pulp & Paper Co.; 1st vice chairman, R. J. Sprang, Champion Fibre Co.; 2nd vice chairman, F. J. Morrison, Hummel-Ross Fibre Corp.; 3rd vice chairman, W. J. Burns, Sonoco Products Co.; secretary-treasurer, B. K. Steadman, Standard Paper Manufacturing Co.

At the afternoon session, Dr. Sidney Negus, professor of chemistry at the Medical College of Virginia, gave a short talk on the history of rayon and rayon in Virginia. He predicted that Virginia will soon be producing over one-half of the total production of rayon in the United States. He spoke briefly on the four different processes; namely, Chardonnet, viscose, Acetate and cupra-ammonium.

A very interesting two-reel movie on "Fourdrinier Wires in the Making" was presented by Mr. Watts of the Cheney Bigelow Wire Works. This film was enjoyed by all, and showed the entire process of wire making from the first step of drawing the wire to the finished fourdrinier wire ready to be shipped to the consumers.

The principal speaker of the afternoon was August Dietz, Sr., of the Dietz Printing Co., Richmond. The speaker was introduced by E. H. Neblett, of the Standard Paper Manufacturing Company, who made a few highly fitting introductory remarks. Mr. Dietz spoke on the early history of papermaking and printing as two very closely allied industries and presented his subject in a very interesting and captivating manner.

The conference was closed with a dinner and entertainment in the evening.

Registration

Albemarle Paper Mfg. Co., Richmond, Va.—Arthur Cherry, J. A. Inge, M. J. Michaux, Heth Owen, R. R. Woodhead, Wm. Woodson.

Bedford Pulp & Paper Co., Blue Island, Va.—Wm. Brydges, F. G. Foster.

Champion Fibre Co., Canton, N. C.—W. S. Brooks, H. A. Helder, R. J. Sprang; **Cheney Bigelow Wire Works**, Springfield, Mass.—Mr. Peterson, Mr. Watts; **Cherry River Paper Co.**, Richwood, W. Va.—S. R. Brown, A. H. French; **Chesapeake Corp.**, West Point, Va.—J. P. Ekberg.

General Dyestuffs Corp., New York—H. F. Hoffman; **General Electric Co.**, Schenectady, N. Y.—F. E. Winslow; **Gibbs Brower Co.**, New York—Ogden Brower, Jr.

Halifax Paper Corp., Roanoke Rapids, N. C.—J. J. Williams; **Hermann Mfg. Co.**, Lancaster, O.—H. N. Booker; **Hummell-Ross Fibre Corp.**, Hopewell, Va.—A. W. Foley, F. J. Morrison.

Manchester Board & Paper Co., Richmond, Va.—Ross Puette; **Mead Fibre Co.**, Kingsport, Tenn.—H. E. Whitaker.

Paper & Textile Mchy. Co., Sandusky, Ohio—V. S. Denison; **Paper Makers Chemical Co.**, Easton, Pa.—L. W. Crouse.

Roanoke Fibre Board Co., Roanoke Rapids, N. C.—E. L. Wrenn.

Sonoco Products Co., Hartsville, S. C.—W. J. Burns; **Standard Paper Mfg. Co.**, Richmond, Va.—R. S. Crump, Harry W. Deffew, Carl Magnus, E. H. Neblett, A. L. Rothschild, B. K. Steadman, J. G. Weiner.

First Fall Meeting Miami Valley Supers

The first fall meeting of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Association was held at the Manchester Hotel, Middletown, Ohio, Saturday, October 27, 1928, with forty-one in attendance representing sixteen companies.

The election of officers for the ensuing year resulted in the following: chairman, W. W. Galloway, Hagar Straw Board & Paper Co.; 1st vice chairman, H. T. Randall, The Champion Coated Paper Co.; 2nd vice chairman, J. W. Smith, The Gardner & Harvey Co.; 3rd vice chairman, H. W. Server, Oxford-Miami Paper Co.; secretary-treasurer, M. L. Barker, The Beckett Paper Co.

Tom Harvey, member of the Executive Committee, briefly spoke on the meeting held at Niagara Falls, N. Y., October 13 and 14, and made an announcement of the Tenth Annual Convention to be held at Wausau, Wis., June 6, 7 and 8, 1929.

The next meeting of this division will be held in joint session with the Miami Valley Paper Manufacturers Association and the Miami Valley Technical Association at Middletown, Ohio, on November 22. This meeting will be of great interest at it will bring together the different divisions of the paper mill to a closer understanding of each other's duties, thus a greater co-operation.

Power in the Industry

J. R. Hartman, manager, electric sales department of the Union Gas & Electric Co., Cincinnati, spoke on the subject, "Steam and Power in the Paper Industry", introducing it with a brief sketch of the use and development of prime movers in the paper mill. The electric motor has decreased the cost of operation, permitted a better and more logical arrangement of equipment and processes, and greatly reduced hazards to workmen. The greatest improvement which has come from this method of drive is the increase in output per inch of machine width. The census of 1925 shows that the industry was 54 per cent electrified and that 37 per cent of the electrical power was supplied by central stations and 63 per cent was generated by the mills. In steam prime movers, 42 per cent of the capacity was represented by turbines while 58 per cent was in engines.

From a relatively wide investigation of power cost and the comparison of various plans of power supply, it is evident that the field of power utilization is more pregnant with possibilities of economy than in the field of power supply. For example, Mr. Hartman said it is difficult to imagine a less efficient machine, from the standpoint of power, than the beater or jordan, the greater part of the energy of which is transformed into heat through the medium of friction.

At the present time, however, the attention of the paper industry is directed very largely to the production of steam and power. Due to lack of experience or over-optimism, many errors are often made. Therefore, the necessity for careful selection of counsel is obvious. It is important that the superintendent or mill owner be familiar with certain underlying principles which determine the relative value of investments as viewed from an engineering standpoint. The question of a choice between a method which is higher in first cost but lower in cost of operation and a method which presents a lower first cost but a higher operating cost, depends upon a number of factors. The cost which enters into the product is made up of two items—fixed and operating, and the plan which does not produce the lowest combination is not economically sound.

Mr. Hartman stated that two mills in the Miami Valley purchase steam and power, and their own power plant consists of a steam meter and a power meter. To obtain maximum economy in this connection, he said, it is probable that paper plants of the future will be located near large steam plants. Such plants, on account of their size, will be able to produce steam at a lower cost than the separate plant. The central plant will furnish steam as exhaust from noncondensing turbines and will rely upon the central station for the balance of the power requirements. No spare equipment in generating capacity will be required. The diversity of the load, as well as the diversity of business conditions,

will render the larger plant more stable from an operating as well as a financial standpoint t... a number of small plants.

Registration

Ball Brothers Co.—J. C. Drogue, H. G. Funsett; Beckett Paper Co.—M. L. Barker, H. H. Latimer, C. F. Niederman, A. J. Wildman; Black Clawson Co.—Allan Hyer, Wm. W. Macklin.

Champion Coated Paper Co.—C. F. Bloom; K. L. Jackson; C. L. McKasson, C. H. Mannion, W. H. Phipps, G. B. Randall, H. T. Randall, J. F. Rice, Chas. Soule; Cheney Pulp & Paper Co.—P. E. Ruppert; Crystal Tissue Co.—Ross Auvil, H. H. Harrison.

Fox Paper Co.—J. J. Andrews.

Gardner-Harvey Company—Edw. Butterfield, John Ditmyer, F. J. Ditmyer, W. B. Hadley, Tom Harvey, Wm. W. Rettig, J. W. Smith, R. H. Z. Smith.

Hagar Straw Board & Paper Co.—Wilson W. Galloway.

Monroe Paper Products Co.—Henry Bert.

Powers Regulator Co.—Harry E. Hadley.

Richardson Company—E. A. Weissbach.

Simonds Warden White Co.—A. J. Allison, Ray R. Thompson; P. A. Sorg Co.—F. A. Alton.

Tennessee Paper Mills.—L. T. Murphy.

Union Gas & Electric Co.—J. R. Hartman, S. F. Whitesel.

Monroe Entertains Southern Superintendents

The Southern Division of the American Pulp and Paper Mill Superintendents' Ass'n held a most interesting meeting at Monroe, La., October 26 and 27, 1928. The first day was devoted to business matters with a banquet in the evening, at which officers for the ensuing year were elected. B. Beasley of the Brown Paper Mill Co. was re-elected chairman; O. J. Olson, International Paper Co., Bastrop, La. was re-elected first vice chairman; J. L. Richardson, of the E-Z Opener Bag Co., Braithwaite, La., was elected second vice chairman and G. Nicholson, of Bogalusa, third vice chairman.

The subjects presented at the different sessions provoked considerable discussion and the information brought out along the various lines was exceptionally valuable.

Check on Soda and Fiber Losses in Mill Effluent—The comment on this topic brought out that filtration paper and 200 mesh wire are used ordinarily, the one or the other, to check losses of this nature. Various mills showed varied losses. It was brought out that the Brown mill is giving much thought to this subject due to the fact that the conservation department has insisted that all possible precaution be taken to safeguard river pollution.

It was admitted that mills of this nature suffered too great a percentage of fiber and soda losses, and B. Beasley, chairman, was moved to name a committee composed of representatives of the mills at Bastrop, Hodge and Bogalusa to work out a method to correct such losses which might be recommended for use by all paper mills.

Wood Room Methods—The association was questioned as to the number of mills that re-screen the product after it is put through the crusher, also how many mills are re-screening the crusher discharge. These methods were found to be generally used. It was brought out that some mills have tried experiments with hardwood instead of pine. Birch and maple have been used, but the results have not been altogether favorable.

In answer to the inquiry as to the number of cords of wood required per ton of fluid, the Brown Paper Mill Co. showed that it figures two cords to a ton. Other mills varied, and gave figures from 1.75 to 2.10.

Low or high sulphidity was also discussed. The Brown mill employs quite satisfactorily 20 per cent which is said to yield both color and strength to the paper. Other mills showed their percentage of sulphidity as varying from as low as 15 per cent to as high as 40 per cent.

Density and Crown of Press Rolls—W. E. Brown of Woonsocket, R. I., read a paper on this subject which was very well received. It was brought out that the utmost care is essential to secure the very best service from the rolls, and gave certain rules for their care.

Registration

Advance Bag & Paper Co., Hodge, La.—Thomas J. Carlin, J. A. Fincken, Bruce Suttle; American Ringer Co., Woonsocket, R. I.—Wm. E. Brown, H. D. Jones; American Printing Co.—H. C. Connolly.

Brown Paper Mill Co., West Monroe, La.—Thomas H. Blazier, J. Brumfield, R. E. Ferguson, A. L. Gardner, O. W. Getchell, J. H. Hilton, Geo. S. Holmes, C. W. Horne, T. T. Howe, D. B. Mays, M. C. McDonald, D. C. Metcalf, W. M. Thomas, J. E. Whitfield, Robert Wilson; Bogalusa Paper Co., Bogalusa, La.—G. Nicholson, A. Suter.

Calcasieu Sulphate Paper Co., Elizabeth, La.—C. E. Green, W. H. Enright.

Diamond Rubber Co., Akron, Ohio—Harry Gaiennie.

E-Z Opener Bag Co., Braithwaite, La.—L. W. Champagne, J. L. Richardson.

Fairbanks-Morse Co., New Orleans—Russell K. Annis, Harry J. Glass, W. J. Veazey; Falls Manufacturing Co., Oconto Falls, Wis.—A. Gusten, A. K. Pilptarick.

Harbison-Walker Refractories Co., Birmingham, Ala.

International Paper Co., Bastrop, La.—H. E. Baumgarten, A. H. Dumaree, O. J. Olson, I. L. Ross, Albert G. Rozyskie; International Paper Co., Camden, Ark.—J. H. Rester, Adam Rezyskie.

Mathieson Alkali Works, Charlotte, N. C.—B. M. Coates; Monroe Hardware Co., Monroe, La.—F. E. Huntley.

Paper & Textile Machinery Co., Sandusky, Ohio—Harold Bing.

Shartle Bros. Co., Middletown, Ohio—H. J. Andrews; Standard Oil Company of Louisiana, New Orleans—J. S. Sisson.

R. J. Tricom Co., New Orleans—E. S. Gaiennie.

U. S. Rubber Co., New Orleans—J. J. Drouant, P. W. Hogan N. J. Pearce.

Weaks Supply Co., Monroe, La.—H. Nichols.

Yellow Pine Paper Mill Co., Orange, Tex.—H. C. Carter, E. N. Wilson.

Southern Forestry Educational Project

Five motor trucks equipped for a three-year missi... forestry education in the rural districts of Florida, C... and Mississippi, under the direction of The American... estry Association, entered the three states early in Oc... to begin one of the most intensive campaigns for popu... forestry education ever undertaken. W. C. McCormick, formerly assistant State Forester of North Carolina, is in charge of the work.

Education of school children by visual and personal contact methods is incorporated in the project as it is recognized by the association that the forest fire evil of the South can be eradicated only by localized education beginning with the younger generation and through them reaching the adult population.

On Thursday, December 6th, 1928, there will be a special session of the annual meeting of the American Society of Mechanical Engineers at the Engineers Building, 29 W. 39th St., New York City. Six papers have been prepared, treating from different angles the problem of shipping materials on skid platforms. Mechanical methods of handling, common in plants throughout the country, have recently entered the distribution field, and the Department of Commerce has sponsored a movement to standardize equipment and provide interchangeability in use. The keynote paper will be delivered by R. L. Lockwood of the Department of Commerce, who will trace the development of shipping material on skid platforms, outline the possibilities for growth and explain the importance of interchangeability in the equipment.

Consolidated Ashcroft Hancock Co., Inc., announces the removal of its Chicago office to 605 W. Washington Blvd. The staff of the American Schaeffer & Budenberg Division, recently consolidated with the above, will also be located in the same office.

First Pacific Northwest Conference

Pulp and Paper Manufacturers Discuss Reforestation and Research

MARKED by instructive and technical talks of practical value to the industry and an attendance that exceeded expectations, the first conference of Pacific Northwest pulp and paper manufacturers, held Friday, October 26, at Anderson Hall, University of Washington, Seattle, Wash., brought nearly a hundred executives and mill men from British Columbia and the states of Washington, Oregon and California. The conference was arranged by university departments and government officials interested in the problems of the pulp and paper industry and its announced object was to discuss co-operation of industry with educational and research institutions.

The splendid program was planned by a general committee consisting of Vernon McKenzie, Dean of the School of Journalism; Professor B. L. Grondahl, of the Forestry Department; A. H. B. Jordan; O. C. Schoenwerk of the Washington Pulp and Paper Co.; and Professor H. K. Benson of the Chemistry Department. Meetings of the conference were held in the Anderson assembly hall and the banquet in the evening, at which the keynote was good fellowship, was held at the Wilsonian Hotel, just off the campus. A western section of T.A.P.P.I. may result from the conference.

Practically every problem of the industry was either discussed in detail or touched upon by the speakers, but problems of reforestation, taxation, and elimination of waste particularly claimed the attention of the executives and technicians.

In welcoming the conference to the University, President Lyle Spencer enumerated the values of trade meetings and for comparison gave figures on the growth of the newspaper conference which started with an initial attendance [illegible] below that of the pulp men.

[illegible] summarizing the program of the conference and the [illegible] of the University in what might come out of it, Professor H. K. Benson made clear that any steps towards organization or group action must come voluntarily from the group.

Reforestation

Reforestation as a Means of Pulpwood Supply—J. L. Alexander of the College of Forestry, University of Washington, was the first speaker at the morning session. In the course of his remarks, Mr. Alexander stated that the per capita area of forest land in the United States is about five acres. In the last century, Great Britain doubled her population and tripled her wood consumption. In this country, the annual growth is about one-fourth the annual consumption. One-fifth of wood is cut for pulp manufacture. At this rate, the supply is expected to last for 150 years, if reforestation is not considered.

The point is being reached where the logging industry, once supreme, must become subordinate in the utilization of our forests. We are also learning that a stand of green timber is the best insurance against fire, for now that many operations are getting close to each other, the fire danger has increased. Reforestation of true fir stands is delayed by burning of slashings. We should aim to get natural reproduction whenever possible as experience tends to prove that it is cheaper than any planting operations. However, in any reforestation program some artificial planting must be done in areas not suited for natural reforestation. In the East, the limits of forest land owned by the bigger mills are so large that reforestation will make permanent the supply of pulpwood.

In reply to a question asked by Col. W. B. Greeley, former chief of the United States Forest Service, Mr. Alexander said that the cost of growing hemlock per acre was not known. Previously in his talk, he had intimated that hemlock furnished ten per cent more pulpwood per acre than Douglas fir.

Taxation in Relation to Reforestation Policy—In discussing this subject, B. P. Kirkland of the College of Forestry, University of Washington, said that five items of cost enter into the utilization of forest land. These items are:

1. Production of land during period of forest crop
2. Establishment of annual forest crop
3. Fire protection
4. Administration
5. Taxation

The three fundamental principles of forest taxation were enumerated by Mr. Kirkland as:

Pulp and paper men of Washington, Oregon, Idaho, Montana and British Columbia at first Pacific Northwest conference, Friday, October 26, at Anderson Hall, University of Washington, Seattle

1. That the total tax be not so high as to kill private enterprise.
2. That no favoritism between industries be shown.
3. That payments of tax be made convenient to income.

Discussing the second of these he declared no data was available but that the forest service was now investigating. Under the third principle he said that cutover lands yielded no income and therefore should not be taxed. Under ways of taxing forest land Mr. Kirkland discussed the yield tax which would be collected only during the time of cutting providing the consent of the state legislature was obtained. He further subdivided the yield method in the sustained yield tax which is in effect a tax on the annual cut, and the system now used most extensively in the operation of forests in old countries which have made a business of reforestation. At present, the speaker stated he had no knowledge of any growing young timber that is taxed.

Two bad practices were mentioned which if eliminated would make all present taxes easy to bear. These are excessive marketing and cutting of timber that should be left standing.

Waste

Logging Waste for Pulpwood—The results of a two and one-half year study of wood wasted in the douglas fir region were summarized by A. L. Hodgson of the United States Forest Service at Portland, Ore. 150 sample acre plats were selected at widely separated points in Oregon and Washington on land logged off by twenty-four different companies. Hodgson estimated the annual waste in the Douglas fir region to be 3,224,000,000 board feet, or 2,000,000 cords of wood. In addition, small material not counted to the extent of seven per cent of the original stand was wasted. From the pulp man's standpoint, one-third of the wasted hemlock, fir and spruce was very good for pulp while two thirds of the Douglas fir and Wesern red cedar was good for pulp of inferior quality according to present methods.

The survey made clear that there was great difference in the methods and wastage left by operators and this was due to many causes. As much as 88,000 board feet was left on some acres or three-fourths of the original stand, while other plats showed a wastage of 6,000 to 10,000 board feet, or about one-tenth the original stand. The average for the 150 acres was found to be 21,407 board feet per acre or about one-fifth of the original stand. About one-third of the loss by wastage was in the form of saw logs that might be taken out as lumber and classed as grade three logs, the lowest grade used by lumbermen. About one-seventh of the total waste also was saw logs, but below grade three standard. This waste however, could be used for pulpwood. Of the total waste potential saw logs made up about fiffy per cent. In addition to the lumber classified above, a lot of material was classified as shingle bolts, posts, poles, cordwood. Three-fourths of the waste fell into four classifications.

The average of the 150 acres surveyed contained one hundred and forty-four pieces of timber of an average volume of 116 board feet. Forty-four and two-tenths pieces were in the form of large broken logs. Thirty-three and seven-tenths pieces were large broken tops and twenty-eight and four-tenths were in the form of small trees, pulled down by the operations and from ten to twenty inches in diameter. The survey also brought out that nearly all mills were now using some logging waste.

The speaker told of one mill which developed a re-logging operation that salvaged much waste. In four months this company took out 4,000,000 small logs, running around four inches in diameter and shipped them 100 miles where they were used for pulp. This salvage ran ten to fifteen per cent, 12,000 board feet or twenty-four cords of wood of the original stand. The average log taken out was 155 board feet in size. The same operators are handling the forest on the sustained yield basis. They are replanting with Sitka Spruce on large areas of land. The survey brought out that the less waste in original or first logging the more merchantable timber the second crop produced.

Sawmill Waste for Pulpwood and Fuel—Col. W. B. Greeley of the West Coast Lumberman's Association, Seattle, gave figures on the use of waste for pulpwood or fuel. Hemlock chips are already much used for pulp, especially number three common hemlock. Spruce is not so popular. Five plants on the Columbia River reported fifteen to eighteen million feet of low grade hemlock used each month. One mill expects soon to convert number two common hemlock to pulp. The development of Douglas fir for waste uses Col. Greeley declared is a real need, as use for spruce and hemlock are now well developed. He repeated several times that in his belief the failure to utilize waste is the greatest drag on the lumber industry, and that lumber must pass beyond the first product stage in its operations. One sawmill of average size, he stated, received $50,000 from sale of pulp and hog fuel, formerly entirely wasted. Col. Greeley conceded that large pulp consumption would do much to overcome the overproduction of lumber.

Technical Subjects Discussed

Following the noon hour, during which the visitors were shown through the laboratories and chemistry department by university students, W. L. Bueschlein of the university opened the afternoon session with a technical discussion on the cooking of Douglas fir with sulphite solution. This was illustrated with charts.

C. P. R. Cash of the Cascade Paper Co., Tacoma spoke on the subject, "Heat Balance in the Recovery Room of a Pacific Coast Sulphite Mill." This address was highly technical, including a formula for heat.

A paper on Mill Research, prepared by Vance Edwards of the Northwestern Pulp and Paper Co., Port Alice, B. C., was read in Mr. Edwards' absence. The fact was stressed that time was necessary in mill results, due to the large probability of error. The writer urged that operating men be not expected to carry on research; instead that this be a distinct activity. The paper gave results of experiments on the age of wood with reference to digester yield in which it was proved that poor wood produced poor pulp. It was pointed out that experiments proved that moisture content is directly related to strength of hemlock. By increasing the length of hemlock and spruce chips eight-tenths of one per cent the sawdust loss was lowered. The paper made clear that various savings could be effected in mills without great expense and stressed close co-operation between operating and laboratory departments.

One of the most interesting talks at the conference was given by A. V. Eastment of the department of electrical engineering of the university on the subject "Radio Control of Moisture." Mr. Eastman related how an Eastern company had almost by accident discovered that a piece of paper inserted between the plates of the condensor of a radio set gave a resistance that could be measured by a meter. By putting paper of different thicknesses between the plates a standard for judging the thickness of paper was obtained. He also explained how a hygrometer could be placed above the board to measure moisture content. The speaker exhibited a small machine in which he showed how the paper measured resistance. In the discussion that followed, the conference was informed that there is a machine on the market that measures the moisture content of lumber.

Professor B. T. McMinn, of the Department of Mechanical Engineering, discussed the subject, "Steam Accumulators," describing the recently perfected mechanism adapted for use in a pulp mill for smoothing out the curve of steam demand, and removing the annoying condition of a lack of steam when wanted, and an overabundance when not required. Professor McMinn showed a chart which proved that demands for steam are higher when an accumulator is installed. Minimum attention is required and installation is simple. The history of accumulators covers about fifty years of actual usage, having been first applied in Sweden In the United States they have been used for about ten years.

The relation of the United States Forest Products Laboratory to the pulp and paper industry was explained by C. C. Heritage, in charge of the pulp and paper section of the laboratory which is located at Madison, Wis. Mr.

Heritage made it clear that the laboratory confined its attentions which experiments directed toward use requirements of the product. Its experimenters must know the physical as well as the chemical properties of pulp and paper products. He showed a series of charts which summarized experiments on the fibers of wood brought out by treatment with phosphorous acid.

That training schools in pulp mills have been very successful and that everything of an educational nature put in force among employees is beneficial to the industry was brought out by D. B. Davies of the Rainier Pulp and Paper Co., Shelton, Wash., chairman of the afternoon session.

Registration

J. L. Alexander, University of Washington, Seattle; Geo. W. Allan, Vancouver, B. C.

W. M. Bain, Crown Willamette Paper Co., Camas, Wash.; P. W. Bielfeldt, Swenson Evaporator Co., Seattle; H. K. Benson, University of Washington; Myron W. Black, Inland Empire Paper Co., Milwood, Wash.; W. E. Breitenbach, Rainier Pulp & Paper Co., Shelton, Wash.; E. P. Brennar, B. C. Pulp & Paper Co., Ltd., Vancouver, B. C.; John W. Brittenworth, Everett Pulp and Paper Co., Everett, Wash.

H. J. Carswell, Hawley Pulp & Paper Co., Oregon City, Ore.; C. P. R. Cash, Cascade Paper Co., Tacoma, Wash.; Andrew K. Cochran, Cascade Paper Co., Tacoma; Joseph J. Cloud, Grays Harbor Ry. & Light Co., Aberdeen, Wash.; F. Leonard Cooper, Braun-Knecht-Heimann Co., San Francisco; Geo. Cropper, Washington Pulp & Paper Corp., Port Angeles, Wash.; N. W. Coster, Fidalgo Pulp Mfg. Co., Anacortes, Wash.; D. E. Cousins, Union Bag & Paper Corp., Tacoma.

D. B. Davies, Rainier Pulp & Paper Co., Shelton, Wash.; R. M. DeCew, Fibreboard Products, Inc., Sumner, Wash.; E. G. Drew, J. O. Ross Engr. Corp., Portland, Ore.

L. S. Edwardes, Electric Steel Fdry., Portland; R. C. Erchinger, C. B. Everitt, Fidalgo Pulp Mfg. Co., Anacortes, Wash.

Stuart M. French, Edmonds, Wash.; Harold T. Fretz, Cascade Paper Co., Tacoma; Leo Friedman, University of Oregon, Eugene, Ore.; H. M. Ford, N. W. Pulp & Paper Co., Portland; John Fulton, Oregon State College, Corvallis, Ore.

S. Geijsbeek, Gladding, McBean & Co., Seattle; Paul J. Power & Light Co., Seattle; Thos. M. Gibbes, Puget Sound Power & Light Co., Seattle; Frederick W. Graham, Great Northern Ry., Seattle; B. L. Grondal, University of Washington, Seattle.

J. E. Hanny, Crown Willamette Paper Co., West Linn, Ore.; J. W. Harder, Chamber of Commerce, Bremerton, Wash.; E. S. Harrar, University of Washington, Seattle; J. E. Hedin, Union Bag & Paper Power Corp., Tacoma; C. C. Heritage, Forest Prods. Laboratory, Madison, Wis.; P. Hetherton, The Longview Co., Longview, Wash.; D. R. Hettelsater, Fowell Engr. Co., Seattle; Robt. C. Hill, The Timberman, Portland; Walter S. Hodges, Portland; Allan H. Hodgson, U. S. Forest Service, Portland; John H. Hoffman, Foster Wheeler Corp., San Francisco; J. D. Hull, Seattle; Wm. Howarth, Everett Pulp & Paper Co., Everett, Wash.

Dick Jesse, Chamber of Commerce, Bremerton, Wash.

W. L. Ketchen, B. C. Pulp & Paper Co., Ltd., Port Alice, B. C.; Lawrence Killiam, B. C. Pulp & Paper Co., Ltd., Vancouver, B. C.; B. P. Kirkland, University of Washington.

Fairman B. Lee, Asbestos Covering & Supply Co.; H. Lundberg, G. P. Jenssen Co., Seattle; I. Lubersky, Fibreboard Products Inc., Portland; Stanley D. Lyle, Seattle.

B. T. McBain, Portland; B. T. McMinn and Vernon McKenzie, University of Washington; W. C. Mumaw, Grays Harbor Ry. & Light Co., Aberdeen, Wash.

Arthur Neale, Chamber of Commerce, Seattle, Wash.

Robt. A. Osborn, Oregon State College, Corvallis, Ore.; A. A. Owens, San Juan Mfg. Co., Bellingham, Wash.

C. A. Palmer, Dougall Woodfibre Co., Seattle; Wm. G. Palmroth, Seattle; C. A. Pitchford, Aberdeen Lumber & Shingle Co., Aberdeen, Wash.

R. A. Sipes, Oregon City, Ore.; Ray Smythe, Willamette Iron & Steel Wks., Portland; John W. Southworth, Everett Pulp & Paper Co., Everett, Wash.; C. R. Stanton, Seattle.

Herman V. Tartar, University of Washington; R. K. Tiffany, State Hydraulic Engineer, Olympia, Wash.; Thomas G. Thompson, University of Washington; L. E. Thorpe, editor, Pacific Pulp & Paper Industry, Seattle.

H. V. Vernet, Oliver United Filters Inc., San Francisco.

S. C. Watkins, Union Bag & Paper Power Corp., Tacoma, Wash.; Wm. T. Webster, J. O. Ross Engineering Corp., Tacoma; W. R. Weill, Pacific Coast Supply Co., Seattle; A. R. White, Tacoma Eletrochemical Co., Tacoma; L. R. Wood, Union Bag & Paper Power Corp., Tacoma.

C. J. Zintheo, Seattle; L. L. Zodtner, Tacoma Electrochemical Co., Tacoma.

Planning Paper Week for 1929

The fifty-second annual convention of the American Paper and Pulp Association and its affiliated organizations will be held at the Waldorf-Astoria Hotel, in New York City, next February 18 to 21, inclusive. The association's staff is already working on the many details of this annual get-together of paper men from all over the United States.

Commissioner W. E. Humphrey, chairman of the Federal Trade Commission, has accepted President Everest's invitation to address the afternoon session of the association's annual business meeting, and will speak on the commission's trade practice conferences as a means of helping business to eliminate unprofitable and unfair methods of competition.

Another interesting feature of the afternoon session of the association's annual business meeting will be an address by Dr. Chas. H. Herty on the future of the cellulose industry. This address will be specially interesting to the technical and administrative officials of the industry. Dr. Herty is a fluent speaker and will tell of the marvels and future possibilities in the use of cellulose.

The morning or business session of the American Paper and Pulp Association's annual meeting will be devoted largely to discussion of the report to be presented by the association's committee on development. This committee was authorized at the association's last annual meeting for the purpose of studying the possibilities of further co-ordination of the co-operative activities of the industry. Under the leadership of Col. B. A. Franklin, of the Strathmore Paper Company, the committee is investigating these fundamental problems of the industry most exhaustively and expects to submit its report to the executive committee of the association well in advance of the annual meeting so that their recommendations may then be taken up by the various branches of the industry and action assured at the annual meeting of the association next February.

The association's annual banquet will be the crowning social event of the week, with a speaker of national importance whose address cannot help but be of intense interest to all those attending this function. "Senator" Edward Ford, whose reputation as a humorist has been thoroughly established as the result of his many successful speaking engagements throughout the country, will insure enjoyable post-prandial entertainment of a more humorous vein.

The National Paper Trade Association, will be in session at the same time, as well as the service organizations of the industry—The Technical, Cost and Salesmen's Associations. Many, if not all, of the American Paper and Pulp Association's affiliated associations will hold meetings at the Waldorf during this week. It is suggested that paper companies make early hotel reservations as the facilities will be taxed during Convention Week.

The annual meeting of the Paperboard Industries Association will be held at the Waldorf-Astoria Hotel, New York City, November 21 and 22, 1928. At this meeting officers will be elected for the ensuing year. On Wednesday, the 21st, and the morning of the 22nd, the three groups will hold separate meetings. Following a luncheon on the second day, the three groups will meet in joint session for the afternoon meeting.

Annual Meeting Cost Association

Representatives of Paper Mills Hear Excellent Papers

By THOMAS J. BURKE
Secretary, Cost Association of the Paper Industry

BRECK ASPINWALL, cashier of the Oxford Miami Paper Company, West Carrollton, Ohio, was elected president of the Coast Association for 1929, in the closing session of the very successful convention held on Thursday and Friday, October 25 and 26, 1928, at the Hotel Statler, Cleveland, Ohio.

While Mr. Aspinwall has only been in the paper industry for a few years, he has during that time made a thorough study of cost work in the industry, as was disclosed by the splendid paper he presented at the convention, on "Standard Costs in a Book Paper Mill."

Mr. Aspinwall said, "In practically every industry there will be found many supporters of standard costs, who believe that they are able through the use of standard costs, to obtain a clearer insight into their business, to have better control of the various operations, to enable them to meet competition with a clearer knowledge of what the profit or loss will be under given conditions, and to obtain financial reports that will present a more vivid picture of their operations and of what actually happens in their plants."

Mr. Aspinwall continued, that he felt he could safely say, that within his experience, the man who has gone back to the use of actual costs, after giving standard costs a fair practical trial, is the exception rather than the rule.

In Mr. Aspinwall's opinion, pulp and paper making seems to offer a particular fertile field for standard costs, because as a rule, the variety of products is not very great.

In closing Mr. Aspinwall said, "There is no question but that most of the information and much of the analysis which a standard cost system yields may be obtained from other sources. I believe, however, that there is an enormous advantage to be gained by having this data tied into the accounts, so that the entire picture may be assembled and presented to the management clearly and concisely."

President Knott's Opening Address

President Knott in welcoming the members to the Twenty-first Semi-annual Convention, made a strong plea for closer cooperation with the work of the American Paper and Pulp Association and its affiliated associations. He urged the accountants to keep up-to-date in their methods and practices, pointing out that we are still in the transitory stage and constantly developing new ideas and better ways not only in our manufacturing methods, but in our cost methods.

He said, "We may pride ourselves upon the growth of our association, not only in the number of members, but in the services rendered to our members. We may indeed feel that these half year marks have in reality been yearly measures of our progress. Let us continue on our successful highway, until the Cost Association shall have firmly implanted itself in the entire pulp and paper industry. In 1925 Mr. John Hyde, then our president, sounded the first recorded call to a bigger and broader field of endeavor when he said, 'We should have a closer cooperation with the activities of the American Paper and Pulp Association and full cooperation between all the secretaries of the various organizations within the parent association.' It is the expanding of this idea into definite form that we have presented to you in the last issue of Pulp and Paper Profits in the so-called Cost Association Plan for Organization. I thoroughly believe that the consummation of this plan in its entirety will result in placing this association in a most enviable position among the trade organizations of this industry. Please allow me to recommend this to your especial attention prior to tomorrow's forenoon session, when the plan will be fully presented and acted upon.

"We are not the first association to undertake work of this nature and already some industries are reaping the benefit of their labors. To quote Commissioner A. F. Myers of the Federal Trade Commission, 'Trade associations can and do render a valuable service in the promotion of cost accounting work. This is a recognized legitimate function of trade associations and is contributing substantially to the prosperity and stability of the nation's business.' I do not need to recall the Maple Flooring and Cement Associations as notable examples of this work, as you all are probably familiar with these cases. In looking ahead I wonder if we all are content to sit in our chairs and let the systems we are now using be our only concern, or are we planning possible adaptations of modern cost engineering? I say engineering advisedly, as I feel the day of the cost accountant is rapidly passing and he is broadening into a cost engineer. Modern times are times of constant changes. We as cost men are not going to allow the newer things in our field to pass through our fingers without making a strong attempt to hold onto the particular items which will merit consideration from our executives. Therefore, I believe we should, in our conventions, take the time to listen to and obtain for speakers, men who while advancing these new ideas are willing to give us their time. We cannot afford to be super-critical and pronounce new theories as too radical for our particular use. Rather let us take the other side and through analysis try to work in the new ideas, in order to remodel the old systems now in use and keep abreast of the times.

"I quote Mr. Harrington Emerson on this point, 'Standards are infinite and ever changing. The best practice of yesterday is the laughing stock of today.'

"Gentlemen, we are still in the transitory stage. Some of us have traveled from no costs, to job lot costs, average costs, standard costs, predetermined costs and now are still groping around for further simplified standard costs, which will result in the elimination of clerical effort and effect a closer tie-in between production, payroll and cost controls, still maintaining, however, absolute accuracy, if such is possible, in our final results. We had thought several times that we had reached the Mecca of cost control but with the constant tide of new ideas surging around us we have been brought face to face with further improvements resulting in additional reductions in overhead expense. I believe each change we make is constructing more sensitive and accurate costs. Personally, I must admit the Old Viking spirit must still remain in my veins, as I delight in embarking on a change in the method of cost finding employed, setting sail for a definite objective with only common sense and hard knocks as my compass and guide. The rocks may be plenty but I believe a deviation is safer than holding to the old course where sooner or later by over-confidence or the watching of too many details, we are too late when making a change to avoid the rocks.

"We take cognizance of obsolescence in determining our costs and in running our mills, therefore, the same theory ought to hold good for our costs systems. Why not scrap the old ideas as there's no junk value attached to them and in their place buy up to date office machinery, just as willingly as mill equipment. I am sure after close investigation we all will find something new that is suitable to our usage. This, men, I believe is the main object your executives have uppermost in their consideration when they allow you to attend conventions like ours.

"Someone will always have to figure the cost as it is even written in the Holy Writ, under the Gospel of St. Luke. 'For which of you intending to build a tower sitteth not down first and counteth the cost.'

"This shows that predetermined costs are not new and that we can further develop this old idea. In conclusion please allow me to once more express my appreciation of your will in electing me to the presidency of this association. Although representing the mill from the most Northeasterly point in the country amongst our membership, I assure you my best intentions have been with the association during the past year, although active participation has been limited.

"Uncle Sam has increased his revenue accordingly and Tom Burke has had to keep his stenographer overtime to catch up with the mail, but nothwithstanding these minor trifles, I do appreciate the honor you conferred upon me."

Fixed Assets

A. W. Astley of the Chemical Paper Manufacturing Company, presented a fine paper on "Fixed Assets and the Plant Ledger." He mentioned the importance that business executives placed today on statistics, which will help them in understanding the relative position of their own businesses to other businesses in their industry, as well as the relative position of their own industry to other industries. He brought out the fact that in our industry the Fixed Assets make up a large percentage of the total assets and therefore deserve to have a Plant Ledger, which will make possible a proper accounting for this important asset.

Mr. Astley distributed forms showing the practice in use at the Chemical Paper Mfg. Company, and explained carefully the use to which each form is put.

At the close of his address he answered numerous questions covering the topic under discussion.

The only speaker who was unable to be present was H. G. Baldwin of the American Appraisal Company, who is ill with grippe. His place was taken by A. L. Etzius, and although as Mr. Etzius said he was "pinch-hitting," he made a fine presentation of the subject.

"Should Pulp Be Sold on an 'Air Dry' or 'Bone Dry' Basis?"

This subject was opened by A. M. Van Douser, assistant secretary and treasurer of the Marathon Paper Mills Company. Mr. Van Douser stated that in his opinion it would be better if pulp were sold on a "bone dry" instead of on an "air dry" basis. He cited a great waste of time in clerical effort without any appreciable gain, as being one of his reasons for holding this opinion. During the long discussion on this subject, it was stated that the Technical Association was heartily in favor of such a change, so it was finally voted to refer the matter to the New Joint Cost and Technical Committee, for further action.

Insurance Losses

Reed B. Timmers of Albany, N. Y., gave a very interesting and instructive talk on this subject. He dealt specifically with one case of a large loss in connection with which he was recently called into consultation and illustrated how easy it was to overlook important items, when compiling "proof of claim of loss" unless every foreman and others connected with departments affected by fire were called into conference and reason explained as to what information was wanted, in order that insured might obtain full compensation for all losses sustained.

Mr. Timmers, when giving information as to how paper mills constantly overlook claim possibilities, created great surprise among those present, most of whom decided to give more attention to this phase of the subject in the future.

Relationship of "Safety Work" to Costs

Earl E. Grant, membership chairman of the Pulp and Paper Section of the National Safety Council, gave a short address following the banquet held on Thursday night. Mr. Grant has evidently studied his subject, stating among other things, that from 75 per cent to 98 per cent of all accidents are due to carelessness. He said that insurance compensation rates varied from 10 cents to 18 dollars per hundred dollars of payroll, while paper mills ranged from $1.10 to $1.75 per $100.00, these rates being further influenced by the individual mills' experience. He also stated that as far as direct costs of accidents were concerned, actual figures in one mill he knew of showed an "accident cost of 64 cents per ton of paper produced and that Department of Safety advised that the direct cost is only about 25 per cent of the total cost of accidents.

Statistics

Stanley Byron of the Hammermill Paper Company opened the morning session on Friday, by presenting an interesting paper on "Statistics as Applied to the Paper Industry." He emphasized the increasing importance of the part statistics are playing in guiding executives in their decisions relating to the various business problems and urged all accountants to cooperate in this work, and to present their data in a form which will be quickly understood by those for whom their reports are drawn up.

Operation Control

James A. Reilly of the American Writing Paper Company, Inc., was the next speaker. He explained the changes made by his company in compiling their cost data and distributed copies of different forms now being used by them. His presentation led to a long discussion and numerous questions were asked. This was one of the most interesting sessions of the meeting, proving the interest the accountants have in putting their cost data to the most practicable use.

Cost Association Plan for Organization of Industry on Sound Cost Basis

The secretary-treasurer explained this plan in detail and after a lengthy discussion, it was proposed by Seth L. Bush of the Crocker-McElwain Company and seconded by A. M. Van Douser of the Marathon Paper Mills Company, that the Cost Association should resolve the plan was well designed and should be put into operation. This resolution was passed unanimously.

A paper of considerable importance was then presented by C. M. Baker, Engineer of the American Paper and Pulp Association.

Mr. Baker has estimated that a possible saving of from $5,000,000 to $10,000,000 may be made by the industry, by a more careful use of their "white water," thus reducing their fiber losses. His estimate was based on data previously collected, through the cooperation of mills scattered throughout the country and would appear a most conservative one. This is a subject deserving of the closest investigation, and as a result of this talk undoubtedly a number of mills will make changes that should prove profitable to them.

Labor Turnover

The final address was given by M. F. Carpenter of the Dennison Manufacturing Company, who talked on "Some Dennison Institutions Affecting Labor Turnover." That these so-called institutions have been beneficial and profitable is borne out by the fact that the Dennison Company's turnover figures are much below the average for the industry. Mr. Carpenter quoted them as follows: 1922—23 per cent, 1923—22 per cent, 1924—18 per cent, 1925—27 per cent, 1926—25 per cent, 1927—19 per cent, and 1928 to date 22 per cent.

The average for the industry, as disclosed by figures collected by the Cost Association for 1927, was about 50 per cent, so that the Dennison Company's average is considerably less than half the average.

Mr. Carpenter's address was well received and at its conclusion a hearty vote of thanks was passed to him, and all the other speakers who had so liberally contributed to the success of one of the best meetings held by the Cost Association.

The secretary-treasurer's report was then presented by Thomas J. Burke. Mr. Burke also presented a form of questionnaire designed to obtain an analysis of production costs semi-annually, from the association's members. After some discussion this was voted on favorably to the effect that copies should be distributed to all members for their comment and prompt return, which will be done in the near future. Mr. Burke specially complimented the officers of the Connecticut Valley, Wisconsin and Michigan Divisions on the excellent meetings which they had arranged during the

past year. He emphasized the importance of these local meetings in providing means for keeping in close touch with accountants all over the country, and again asked for the assistance of the officers of these Local Divisions in obtaining new mill memberships, to assist in carrying on to the best advantage in the broader field of work now being covered by the association.

Mr. Burke also referred to the Depreciation and Obsolescence study now being made and asked all mills who have not replied to the circular letter sent out last June on this subject, to do so at the earliest opportunity. He emphasized the fact that this information was wanted for study only, and that no action of any kind was contemplated in connection with the plan designed by the Commissioner of Internal Revenue until such time as the industry had had a full opportunity to express itself regarding any report submitted as a result of the study to be made as soon as sufficient reliable data has been collected. This data is required from every pulp and paper mill in this country, Mr. Burke said, as promptly as possible.

He asked for better support from the mills and expressed the hope, eventually every mill, now a member of the American Paper and Pulp Association, would take under serious consideration the advisability of spending $115.00 a year in supporting the work the association is doing, which he said had a direct bearing on the "profitless prosperity" problem now confronting this, as well as many other industries.

Farrel-Birmingham Announces New Speed Reducer Series

Announcement has been made by the Farrel-Birmingham Co., Inc., Buffalo, N. Y., of a new and complete series of speed reducers which have Sykes continuous tooth herringbone gears and anti-friction bearings. The series range from 3 to 5000 horsepower.

The improvements claimed for this new design having roller bearings of the type which combine journal and

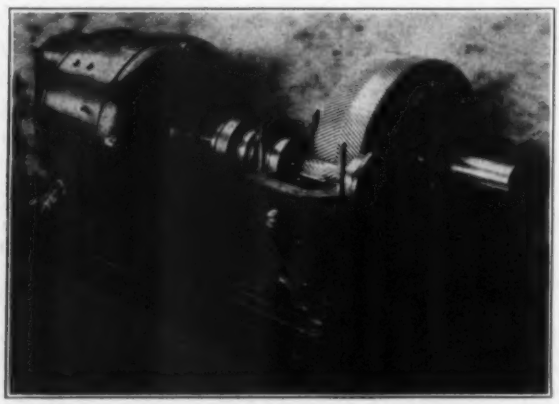


Figure 1

thrust capacity, are that both pinion and gear shafts are held from end float and are, therefore, protected from abuse from connected mechanism. Mechanical efficiency is claimed to be increased to between 98½ to 99 per cent for a single reduction and from 98 to 98½ per cent for a double reduction.

Lubrication is simpler than with the plain bearing units since in all cases the same oil may be used for gears and bearings and the splash and flood automatic system of lubrication is possible throughout the whole series.

There is a considerable saving in space, and the initial cost is reported to be less than that of plain bearing units due to the interchangeability of the gear units enabling them to be manufactured in larger quantities.

Figure 1 shows a single reduction unit mounted on a common baseplate with motor. This series is suitable for ratios between 2:1 and 10:1, and powers between 3 h.p. and 300 h.p.

Figure 2 shows a double reduction unit suitable for ratios between 10:1 and 60:1, and powers between 5 h.p. and 200

Figure 2

h.p. This photograph also shows a typical outboard mounting where generated straight tooth gears are used for the final reduction.

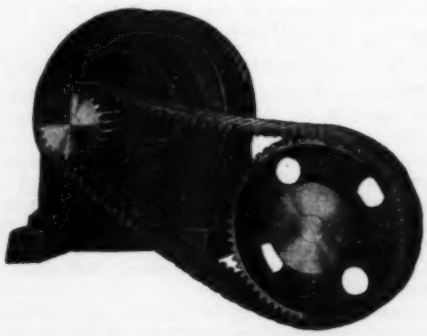
The manufacturer has issued a new booklet describing this series of units and giving charts containing horsepower capacities, general data on Sykes gears and illustrations showing their application. Copies will be mailed on request.

Link-Belt Silent Chain Drives from Stock Now Available Up to 60 H.P.

Link-Belt Company's new Silent Chain drives from Stock book, just published for their trade, evidences the soundness of an idea advanced by that organization some four years ago, when they inaugurated the plan of furnishing silent chain drives from stock. At that time they announced that silent chain drives of ½ to 10 h.p. would be available from stock, as a joint result of standardization and quantity production.

Theretofore, for more than twenty years, the installation of silent chain drives had been strictly an engineering problem. By their plan, they proposed to so simplify the ordering of drives, through the provision of carefully arranged tables, etc., that their customers would be enabled to order direct from stock. In 1926 the range of horse-powers was increased to 15 h.p.

Now, two years later, and only four years after the idea gained its first impetus, the demand for drives from stock



has made it necessary to increase the range to 60 h.p. According to their latest silent chain publication, Book No. 725, it will be possible to obtain drives as high as 60 h.p., in practically any reduction from 1 to 1 to 7 to 1, for immediate delivery, by distributors in the principal cities of the United States.

The "drives from stock" plan does not, of course, in any way affect the range of horse-powers available in the silent chain engineering drives which this company furnishes to industry in general, in drives up to 1000 h.p. and over.

Link-Belt Company's production of silent chain drives is entirely concentrated in one plant—the Dodge Works, at 515 N. Holmes Ave., Indianapolis of which James S. Watson is manager.

1419-20 Advertising Pages

What Speed Do You Want?

By W. F. SCHAPHORST, M. E.

ALL right—here it is.

"They can't put you in jail for making your own stuff", said the lawyer to his client.

"But, nevertheless, here I am in jail", retorted the client, "and they tell me it's because I made my own".

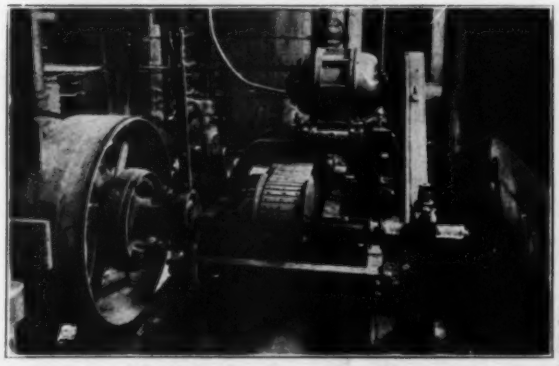
Many things are now being done that were in the "can't be-done" class not so long ago, within the memory of all of us.

For instance we were taught in our youth that "You cannot make a silk purse out of a sow's ear". Yet, just to prove that the originator of that wise saying didn't know what he was talking about, a prominent research concern recently made a silk purse out of a sow's ear and exhibited it at an industrial show.

"Glass cannot be made in a continuous sheet", said the glass experts to a big automobile manufacturer only two or three years ago. But did that discourage the automobile manufacturer? Indeed not! He had heard similar tales before, had disproved them, and so merely turned around and placed this order with his own engineers who knew nothing whatever about glass or its manufacture, "Develop a method for making our windshields in a continuous sheet". And forthwith the engineers worked at the problem, solved it, and their windshields are now being made in a continuous sheet. The glass world sat up and took notice.

Variable speed transmission operating a cutter in the manufacture of cartons. Speed and delivery is from 50 to 250 f.p.m., cutting sheets from 16½" to 82½", at any speed of the paper mill

You and I, all of us, know many instances similar to the above. They used to tell us that lubricating oil couldn't



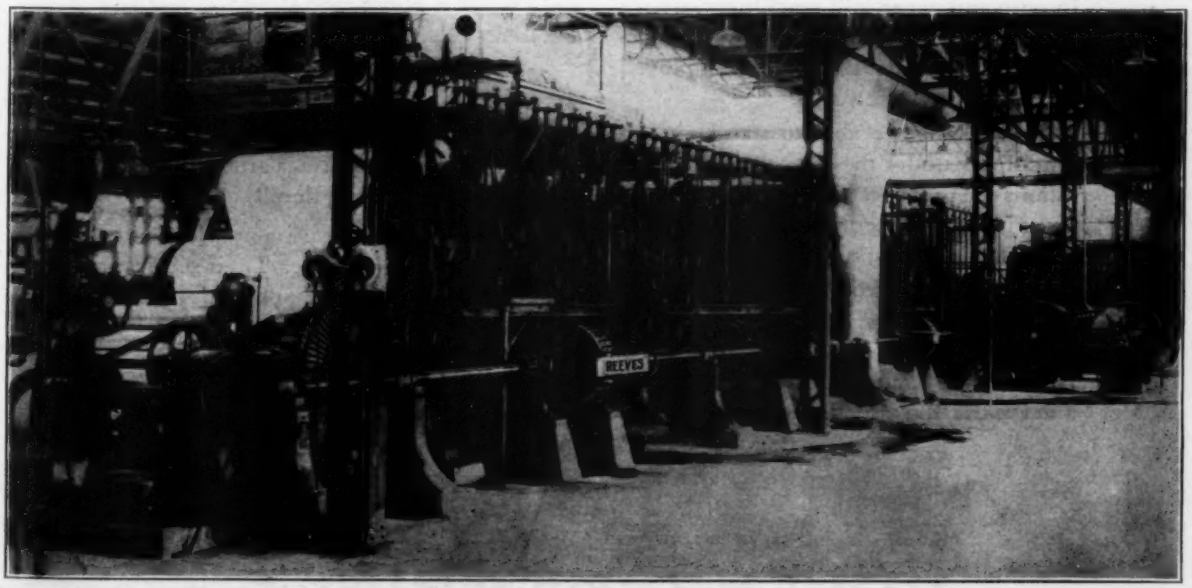
Variable speed transmission driving a binder board machine

possibly have high film strength and high lubricity both at the same time. 600 lb. per sq. in. boiler steam pressure was the "limit", and 800 degrees F. was the temperature limit. A boiler baffle couldn't be both flexible and tight and neither could a gasket. Successful mineral tanned leather belting "couldn't be made" because of its softness.

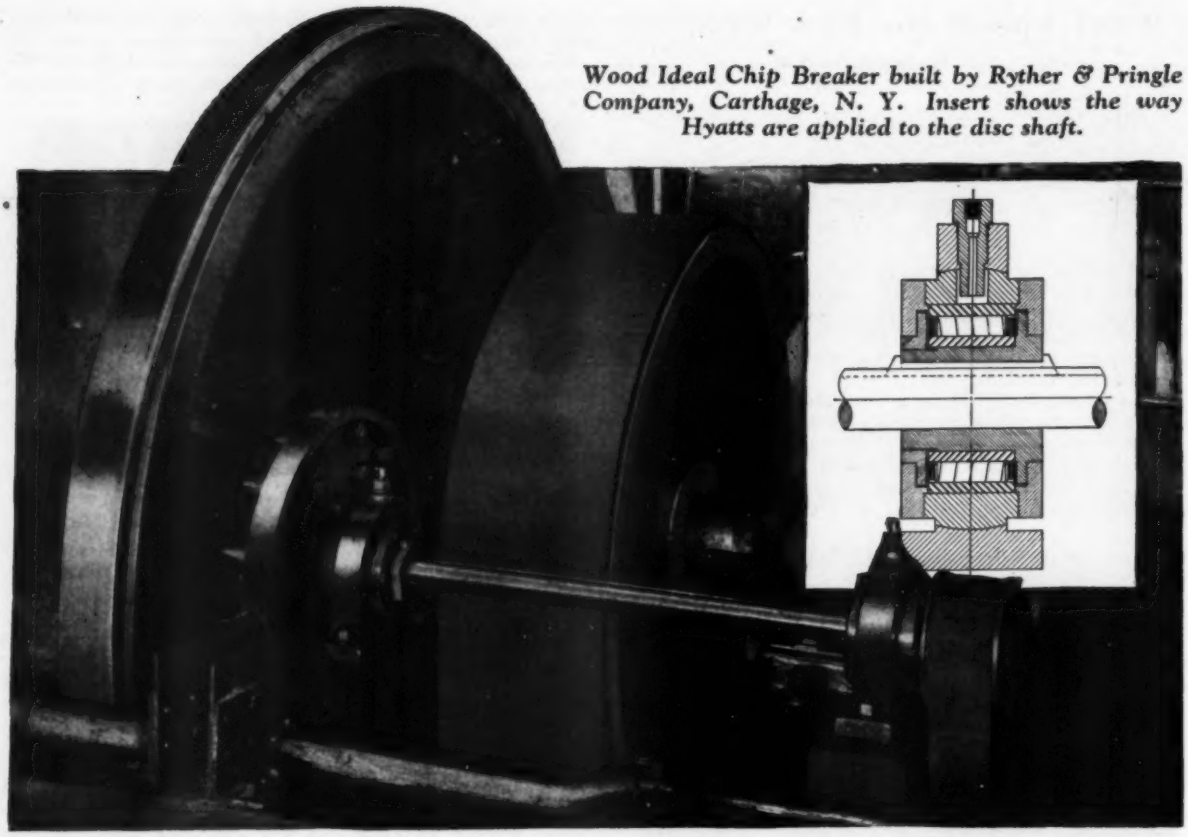
So you see, it is almost "dangerous" these days, to say that a thing can't be done. When a lad, I was told that the Creator Himself couldn't make a two-year old colt in ten minutes, but maybe He could if He wanted to. I won't say that He can't.

One of the many former impossibilities that we have with us today is a power transmission device that will convert a given number of pulley revolutions into almost any desired number or r.p.m. It will vary the speed for you at will—while the machine is in operation. No stopping to change pulleys or throw belts. No time lost. You get any speed ratio you want. If you want 379¾ r.p.m. you can have it by a simple twist of the wrist. If you want to increase that a bit, say to 383.776 r.p.m.,—very well—the device will give it to you and then will almost say, "Give me a difficult one."

No doubt thousands of us have at one time or another puzzled over the possibility of making a machine that would



In this installation there are eight variable speed devices driving asbestos paper machines. Double variation is obtained. Thus all of the machines can be regulated through one, and each separate part can be regulated through the others



Wood Ideal Chip Breaker built by Ryther & Pringle Company, Carthage, N. Y. Insert shows the way Hyatts are applied to the disc shaft.

Difficult Bearing Applications are Easily Overcome with Hyatts

In pulp and paper mill machinery, where continuous, carefree bearing service is required, Hyatt Roller Bearings are employed for the tough assignments.

That Hyatts are able to stand up unflinchingly under the most gruelling conditions is the best testimonial in their favor for other essential, but perhaps less arduous, bearing applications as well.

The Ryther & Pringle Wood Ideal Chip Breaker installation is a striking example of Hyatt durability. Several designs of bearings were tried out in this machine, and the bearing difficulties were overcome only when a Hyatt mounting was finally devised.

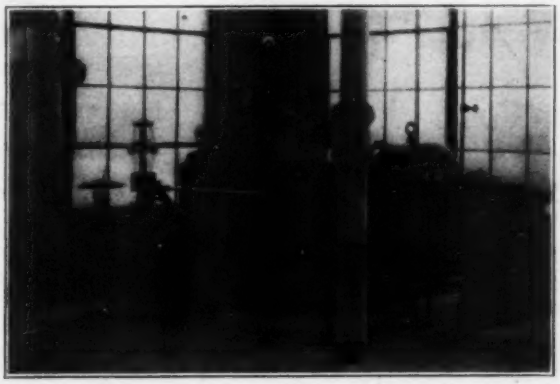
After long, dependable service the builders of this Hyattized equipment report that "The Hyatt application has worked out fine, and the machines are giving satisfaction without exception."

Maybe you have a bearing problem that Hyatt engineers can solve. Their services are at your disposal for application data on new equipment or for changeover.

HYATT ROLLER BEARING COMPANY
Newark Detroit Chicago Pittsburgh Oakland

HYATT
ROLLER BEARINGS
PRODUCT OF GENERAL MOTORS

give a variable speed ratio via pulleys and belting. I will admit that I have. But it appears that only one of us hit on the method of using two sets of double conical pulleys, each set having the cone apexes pointing at each other, and a V-Belt connecting the two sets. Then, to obtain any speed ratio, simply move the cones of one set away from each other and simultaneously move the cones of the other set



Here is a vertical design of the variable speed device used to vary the speed of a steam turbine governor in a large paper mill

toward each other, and the "t" is knocked out of the old "Can't be done". Very simple. Very fine. It may be done either by hand, or automatically, or by remote control. Connections can be made with pulleys and belting, pinion and gear, sprocket and silent chain or roller chain, direct connected in some installations, and indeed any type of connection can be used.

Of course a device of this type cannot be used everywhere economically. Where speeds are changed only occasionally,

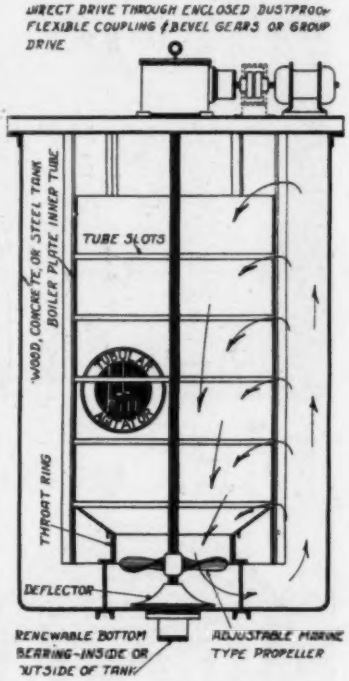
A variable speed device driving a paper corrugating machine

and where the old step cone pulleys will do the work satisfactorily, I wouldn't recommend this modern device. But where you want a fine adjustment, where you want to change speed without stopping your machines, where speeds must be changed often, and where a considerable range of speed variations is essential, I know of nothing that can approach this device. It is strong, compact, durable, and surprisingly efficient.

An Advance in Mixing and Agitation

A real scientific advance has been made by the engineering department of The Hill Clutch Machine & Foundry Co., Cleveland, Ohio, in the development of an improved system of mechanical agitation, called the Hill Tubular agitator, a patent which has been applied for.

The Hill Tubular, a diagram of which accompanies this article, insures a positive and powerful current with the least expenditure of power. The entire mass is in constant movement. There are no dead spots where the liquid does not circulate. The current action through the Hill Tubular gives a rolling movement of intimate mixing outside the tube and a return to the inside of the tube which completes the cycle.


DIRECT DRIVE THROUGH ENCLOSED DUSTPROOF FLEXIBLE COUPLING & BEVEL GEARS OR GROUP DRIVE
WOOD, CONCRETE, OR STEEL TANK
BOILER PLATE INNER TUBE
TUBE SLOTS
THROAT RING
DEFLECTOR
RENEWABLE BOTTOM BEARING-INSIDE OR OUTSIDE OF TANK
ADJUSTABLE MARINE TYPE PROPELLER

One of its uses is now in operation in two paper mills in the preparation of clay filler. It is also especially well adapted for causticizing and starch mixing.

The Hill Tubular agitator is a development and improvement of the Marine Propeller Type built by the Hill Company thirty years ago for cement slurry. The marine propeller in the throat of the tube produces a downward or upward current without turbulence or eddy current. The tube and bottom deflector control and direct the flow of the current so that the entire volume of the tank is in circulation without dead areas.

Thorough and instantaneous intermixing takes place between the upward and downward currents through the tube slots. Deposits or precipitates are prevented from forming or are swept off of the bottom of the tank by the propeller wash.

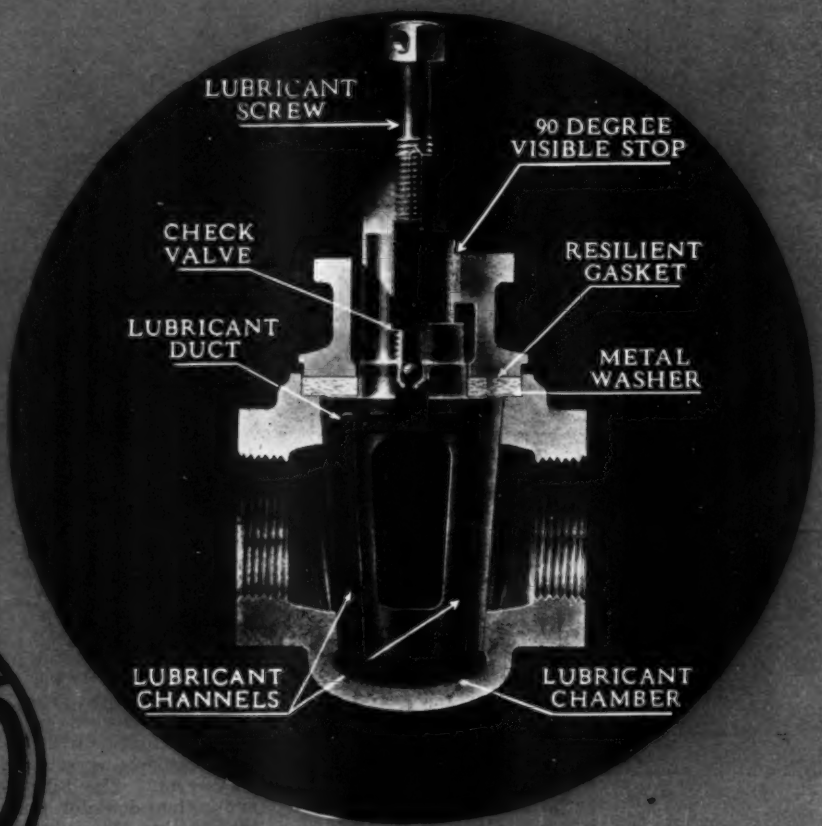
The time required for agitation is low. Circulation and intermixing begin immediately with the propeller movement throughout the tank.

Power consumption is extremely low. Only skin friction in the tank and tube must be overcome. Power consumed by eddy currents, turbulence and churning of the propeller unit is saved. The agitator does not require constant operation. It will instantly pick up any precipitate deposit or sludge which has not solidified when the unit is idle. The mixture can stand for hours or days under such conditions and very quickly be brought to uniformity. This feature combined with the low horsepower required when operating makes it very economical.

It can be made to suit any circular tank. Structural steel frame work is ordinarily furnished to mount the steel or wood tanks and when the tank is furnished, the units are shipped completely assembled ready to operate.

Nordstrom Valves

—the essential valves for the Paper Industry



Won't Leak
Won't Stick

MERCO
TRADE MARK

Recommended for service on various lines in paper and pulp mills. The Nordstrom Valve is unique in that it operates on a lubricating principle, the lubricant being forced by a set screw through a hole in the shank of the valve and grooves along the side of the plug to the bottom of the valve, lifting it and greasing it by hydraulic pressure. Different lubricants are used for different services, depending upon the nature of the fluid or solution. Sizes ⅛" to 24", straight-way, three-way and four-way.

Ask for new Catalog

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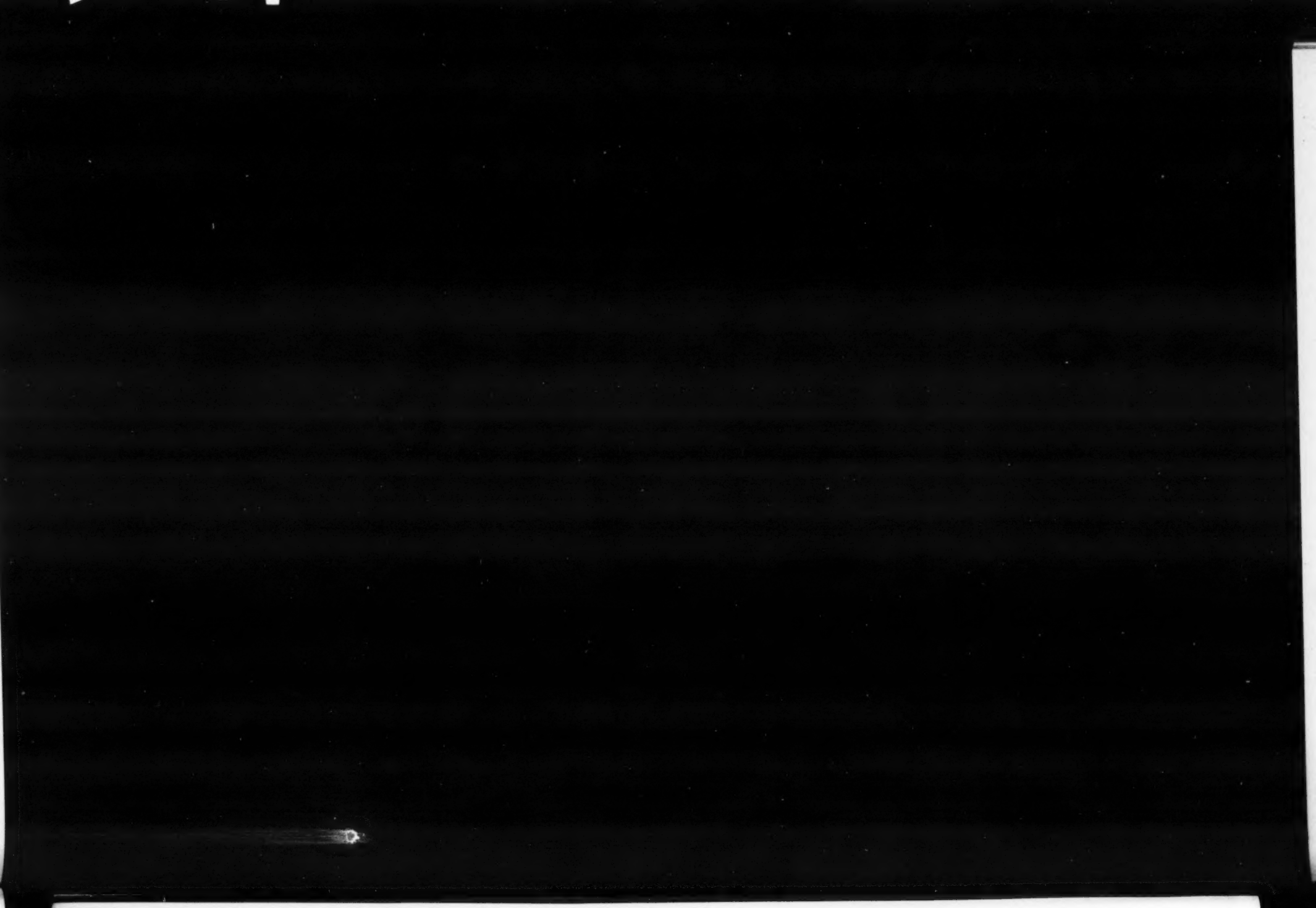


Southwark's Steam Presses in Masonite Process

The Southwark Foundry and Machine Company, Philadelphia, since its establishment in 1836, has developed machinery that has become standard equipment for mechanical plants all over the world. Its willingness to approach unusual engineering problems and the skill and ingenuity displayed by its engineers in the solution of such problems, has made the company exceptionally well known.

Some years ago, the Southwark company entered into the design and manufacture of hydraulic machinery for all purposes, such as pressing, moulding and forming various materials, also for compressing and baling fibrous materials such as pulp laps, bagasse and cotton. A recent development along these lines was a machine for briquetting metal borings and turnings as well as ores and their by-products. This article deals specifically with another interesting development in the hydraulic machinery field, namely, the steel platen press which is adaptable to a variety of industries.

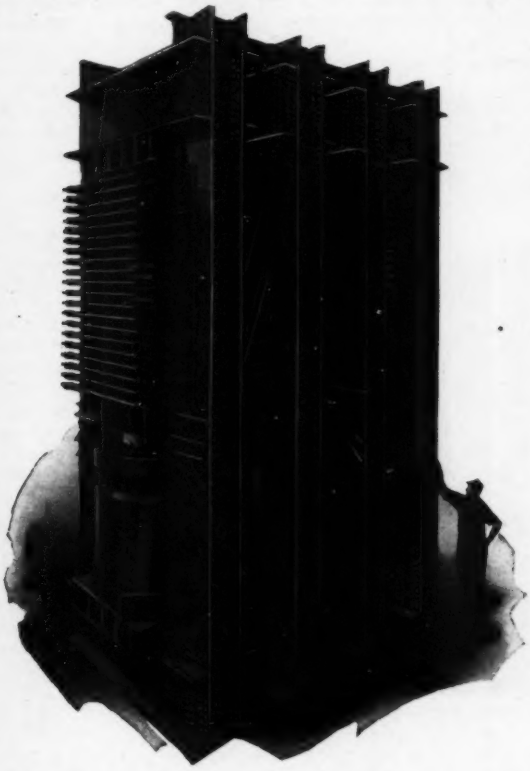


Figure 1. One of the large steel steam platen presses built by Southwark Foundry and Machine Co. for the Mason Fibre Co.

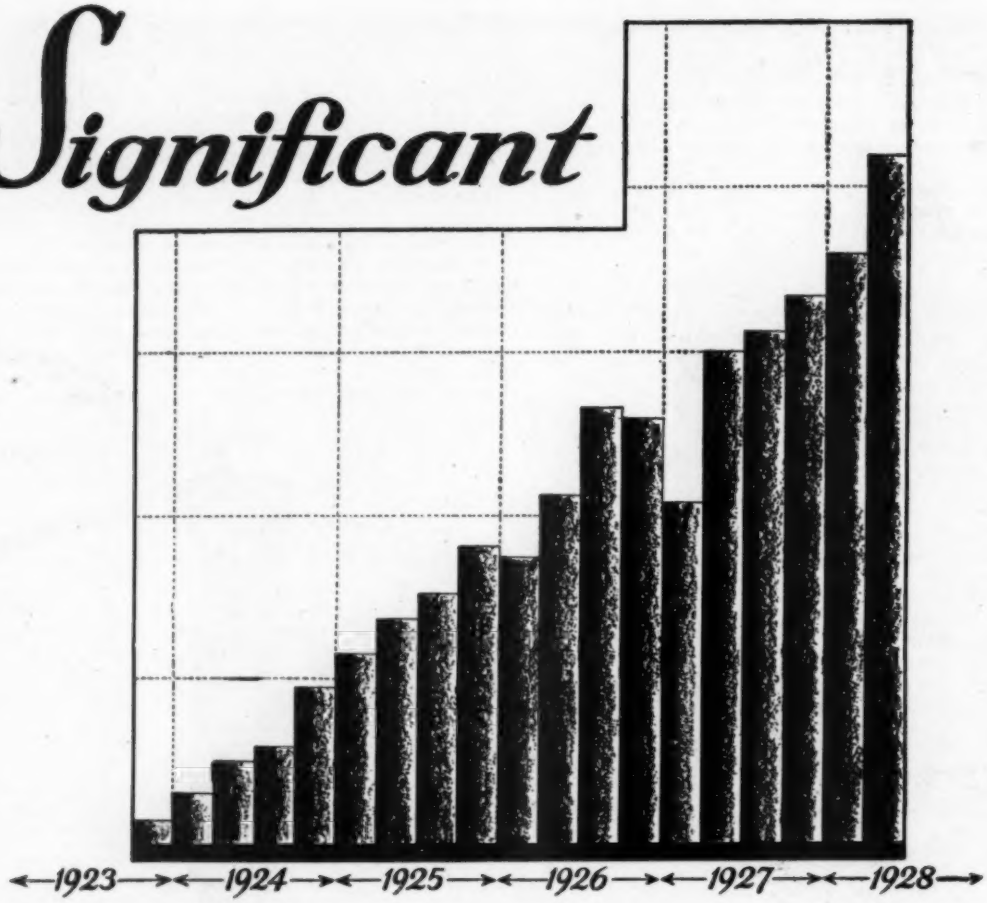
Among the many important new industries recently developed as a result of conservation policies, is the manufacture of composition boards from the sawdust, chips and waste wood discarded by sawmills. The needs of this comparatively new industry led Southwark Foundry and Machine Company to develop a type of steel steam platen press for pressing, drying and finishing this composition board which is used as wall-board, insulating board, interior finishing and floor covering.

The large, multiple opening, steel steam platen press shown in Figure 1 was built for the Mason Fibre Company, Laurel, Mississippi, for use in the production of their composition board, known as "Masonite," which is manufactured from sawmill wood waste. A brief description of the Masonite

Figure 2. A high-pressure forged-steel gun used by the Mason Fibre Company for exploding wood chips into fiber

Figure 3. One of the large hydraulic cylinders and rams used in the press shown by Figure 1

Significant



WHY DO KALBFLEISCH ROSIN SIZE SALES STEADILY GO UP?

THE most important O. K. is that of the buyer and user. That is why this chart of comparative sales of Kalbfleisch Rosin Size is interesting and *significant* to all paper mill executives.

Kalbfleisch Rosin Size was first offered to paper mills five years ago. Immediately it won friends through its outstanding quality . . . is winning new friends every month, as the chart so graphically shows.

Today, four Kalbfleisch plants insure prompt deliveries. Thus production keeps pace with demand . . . assuring another advantage to paper mills that demand good size, well serviced.

for PAPER

The
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WATERBURY, CONN.
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process by F. G. Schranz, vice-president and sales manager of the Southwark Foundry and Machine Company, follows:

Masonite Process Briefly Described

The waste wood first goes into a "hog" which cuts it into chips which are screened to insure getting the proper size raw material. These chips are fed, through a charging valve, into high-pressure forged-steel guns, each of which holds about 200 pounds of chips to each charge. Figure 2 shows one of these guns which are about thirteen feet high. After the charging valve is closed, steam is admitted at a pressure of about 200 pounds per square inch which is held constant for about fifteen seconds. The pressure is then suddenly increased to about 1000 pounds per square inch and held for four or five seconds. At the end of this period the discharge valve is opened and the chips are forced through a narrow aperture, at a velocity of about 4000 feet per second, and exploded into fiber. After leaving the gun, the fiber passes through a cyclone separator where the steam escapes to the atmosphere and the fiber drops into a stock tank, is mixed with water, and passes into the refiners. The refined stock passes to the fourdrinier machine where soft sheets five feet wide are formed between rollers, felts, and wire screens, to a thickness of about two inches which is reduced to three-quarters of an inch as the sheets leave the last pair of rollers. As the material comes from the fourdrinier machine, the sheets are automatically trimmed to a width of four feet six inches and a length of twelve feet.

These sheets are fed to press charging racks which hold twenty sheets, corresponding to the number of openings in the steam platen press. The racks are then transferred to the front of the press and the sheets are fed to the twenty openings in the press by means of a special charging device.

The Southwark press which is operated by means of three hydraulic rams, each fifty-two inches in diameter, is capable of exerting a pressure of 2000 tons but the pressure actually used depends upon the nature of the product being made. A very light pressure is exerted for about fifty minutes in making insulating board whereas the hard board requires a heavy pressure for about half that length of time.

Figure 3 shows one of the large cylinders and rams used in this press. These cylinders weigh 18,500 pounds and have a length of eight feet with an outside diameter of about 64 inches. They are open-hearth steel castings made by Standard Steel Works Company at Burnham, Pa. The hydraulic rams which were manufactured at the Eddystone plant of The Baldwin Locomotive Works are made of a very special, close grained, cast-iron mixture and machined to a highly polished surface. Each ram weighs 22,000 pounds and is eight feet six inches long with an outside diameter of 52 inches.

Expects Revison of Paper Tariff

"Inasmuch as New York is one of the three most important papermaking States in the union the enforcement of the national tariff laws to prevent unfair foreign competition is most important to this State," said Warren B. Bullock, manager of the Import Committee of the American Paper Industry, before the Glens Falls (N. Y.) Rotary club on November 1.

With all the smoke screen about the tariff which is being disseminated by both parties in the campaign now so near its close, one thing must not be overlooked, and that is that tariff revisions is certain during the next few months, a year at the latest.

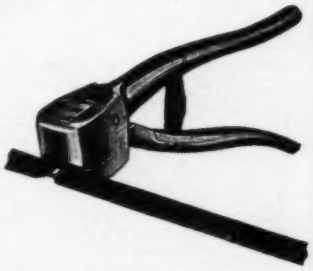
The Import Committee of the American Paper Industry, however, has not devoted its attention to the writing of tariff schedules, but solely to the enforcement of the laws already in effect. When the committee was formed, the country was being flooded with foreign paper imported in evasion of the Tariff Act, either by undervaluation, misclassification or dumping.

You had better apreciate the efforts of importers to evade the law when you are told that even religious publications are attempting to secure free entry of the book and thin bible paper they use by misclassifying the paper as standard newsprint, which is of all the grades of paper made, without a protective duty. When such users are attempting to evade the laws of the United States it is evident that the American paper industry faces a serious problem.

The Import Committee, however, is representing the paper industry in the vigorous campaign to stop such practices, and its success has been such as to warrant the co-operation of every paper mill in the United States.

Two New Safety Products

The Stanley Works, Box Strapping Division, New Britain, Conn., has recently put on the market two new safety products—The Stanley Eversafe box strapping and round end cutter, the functions of which add to the safety of workmen in shipping departments.

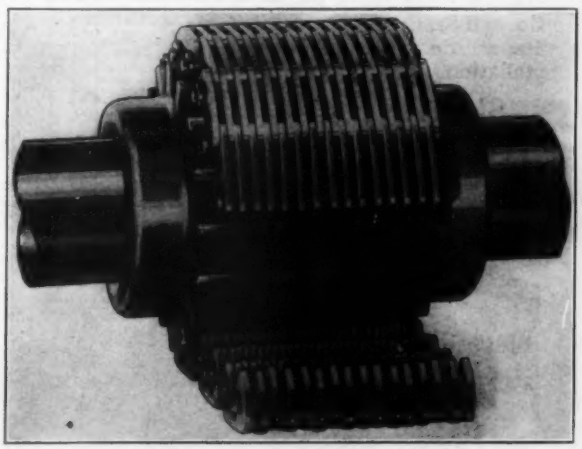


New safety features of the box strapping are round safety ends and round edges affording no chance of cutting or scratching workmen's hands, and sterilized Japan finish, being a protection against infection.

The Stanley Eversafe round end cutter is a real and needed safety improvement. It can be used with almost any kind of box strapping, cutting two round safety ends at one clip. The combination of these two new products is a valuable advance in promoting safety in handling and shipping.

Morse Flexible Coupling

The Morse flexible coupling, product of the Morse Chain Co., Ithaca, N. Y., and illustrated herewith, consists primarily of a Morse Chain wrapping two sprockets, each ½ the

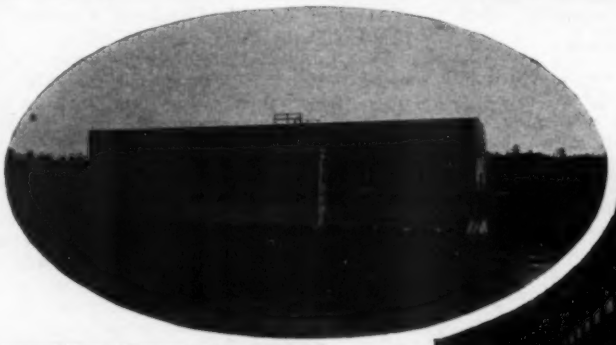


width of chain, one with guide groove in center of face to hold chain in place, the other with no guide groove and free to float under the chain. The chain fits loose enough on the sprockets to take care of ordinary misalignment and lack of parallelism.

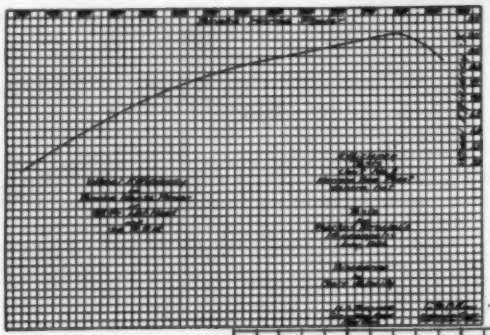
The high efficiency, durability and simplicity should recommend this coupling to users of flexible couplings.

Dr. Chas. H. Herty, who has been named as one of the principal speakers for the next annual meeting of the American Paper & Pulp Association, has recently opened offices at 101 Park Avenue, New York. While continuing his connection with the Chemical Foundation, Inc., as special representative, Doctor Herty intends to devote a great part of his time to the location and development of industries utilizing the natural resources of southern States.

SMITH Turbine Test Results



EFFICIENCIES THAT ARE WORTH WHILE



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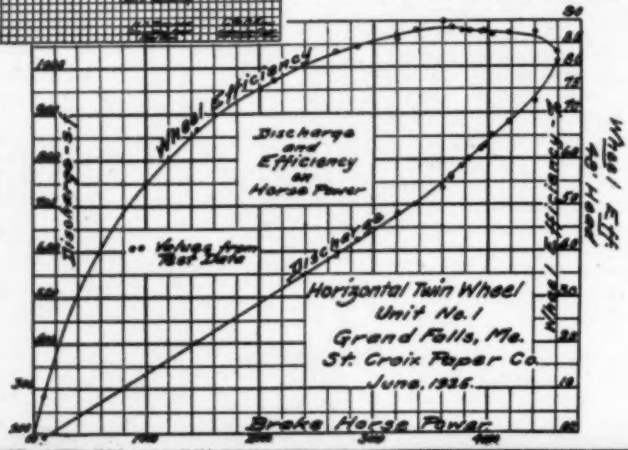
Let our engineers study your problems

Accompanying diagrams show remarkable results obtained in field tests of Backus - Brooks Co. and St. Croix Paper Co., installations of

SMITH TURBINES



If Interested in the Economical Development of Water Power Write Our Dept. "T" For Bulletin

S. MORGAN SMITH CO.—YORK, PA.

Some Outstanding Hazards in Paper Mills and Their Control*

By CLARENCE H. O'CONNELL
Safety Engineer, International Paper Company

OUTSTANDING hazards in pulp and paper mills have been and are still so numerous that it has taken years of study and endeavor to get them even under partial control. The unfortunate feature is that a great part of the experience gained and corrective measures employed have been brought about at the expense of much physical and mental suffering by human beings.

The hazards dealt with in this paper certainly are outstanding since in nearly every operation mentioned, one or more lives have been lost.

Wood Handling Hazards

In mills where wood is received in its raw state, prepared and stored, the dangers incidental to its handling are greater than many realize. Thirteen foot logs traveling up an inclined log haul where at any time a log may be disengaged from the hooks and tumble backwards, can only be guarded against by having sufficient clearance at the sides and at the bottom of the incline for men to jump away should this occur.

Saws revolving at a tremendous speed require expert handling and inspection to guarantee freedom from breakage. In addition there should be swinging guards in front of saws to protect sawyers in case a stick flies back.

Men guiding the wood into chutes where a jam often occurs, necessitates rapid and careful handling to keep things moving and at the same time avoid injury from flying blocks. We believe that men selected for this work should be given particular attention and instruction by the foreman at this operation. It requires a man to be alert and to move rapidly and we know this type of workman is also liable to be daring and a chance taker.

Conveyors, no matter at what speed they travel are dangerous, when, as often occurs, a workman takes the short cut and climbs over a moving chain. Signs forbidding this practice help but there must also be continual watchfulness exercised by the gang boss.

Wood being unloaded from cars presents a continuous hazard by the fact that in no way can control be exercised to the point when a stick will not occasionally drop from the tier to the car floor; and, in this case when wood is not piled but dumped into cars, the hazard is much greater.

It is not unlikely that the loading of cars in this manner besides being hazardous at the unloading point, is false economy. Time is saved of course in loading but the unloading is a very slow process. Not more than one man can work in the car door and he is obliged to be continuously jumping back and forth to avoid injury.

When an accident does occur here, it is usually one or more broken toes, possibly a fracture further up in the foot. What is believed to be a partial remedy is the wearing of safety shoes or mental toe guards. It is certain that either afford some protection from foot injuries.

When it is necessary to take the wood from piles of 20,000 cords or less, every precaution is necessary to do the work in a safe manner. As the pile is being dug into from the bottom, an overhang shows above and in warm weather this will usually take care of itself by gravity, but in every instance when wood falls from a height in bulk, workmen must be continuously being put on guard to avoid being hit. In winter, the situation is further complicated by frozen piles, wood is hard to dislodge and gradually the pile assumes a dugout appearance at the bottom with jutting ledges above. It has been the practice, too much so, for men to climb the pile and attempt to break portions of it down by throwing sticks from a certain distance toward the edge. Due to the uneven formation there is no telling how far back the slide will reach. In recent years the use of a heavy metal drag to rake the face of the piles has worked out pretty well. This device, sometimes an old ship anchor, can be rigged with cables to operate by electric or steam power and by its use a few times a day, sufficient wood is dragged down to keep a force of men working.

Electrical Hazards

The recent complete electrification of paper mills introduces a hazard that to the layman is little understood and to the electrical operator or repair man, a constant source of danger. Experience has shown that all electrical workers expose themselves at times to this danger, new employees due to inexperience, older ones to overconfidence and habits acquired during years of experience, when perhaps they were just lucky. How often we hear an electrical worker recite an experience where he absorbed 550 volts and was only jarred or stunned for a moment. The fact that he did survive a near accident of this sort is no proof that death will not result from even less voltage, depending on the physical condition of the victim, and the tools and appurtenances with which he is in immediate contact.

Without any knowledge of electrical power or its application, we do know that electric railways, public utilities and and manufacturers of electrical equipment where apparatus is subject to severe tests, operate sucessfully and with comparative safety. We know also that this could not have been accomplished without intensive study as to safety standards and safe practices and the application of rules which will insure safety if followed.

Therefore, we who have this problem as only a part of our process, should endeavor to minimize the hazards we have. First, by thorough instruction of electrical workers, continuous inspection of equipment and surely the provision of safety equipment, rubber mats, gloves, fuse pullers, rubber blankets, etc.

Safety meetings of electrical workers apart from regular plant safety committee meetings are recommended. Although rules cover ordinary causes of electrical accidents, it is important that all hands get together at regular intervals, perhaps because of changing conditions and equipment but at any rate to create and maintain the tendency to think and act in terms of safety.

What cannot safely be dispensed with among any group of electrical workers is a well trained first aid team. Among safety men, the knowledge of this requirement is as old as the hills, yet, lapses in training do occur, changes in personnel perhaps may reduce its efficiency and when the crash comes with a man's life hanging in the balance, regrets and alibis are of no value.

What is of extreme importance in connection with electrically controlled machinery, both for electricians and others, is the use of danger tags on controls whenever it is necessary for a workman to make repairs or in any way expose himself to the possibility of being caught by parts while in motion.

There is to contend with, also, repairs and construction work around exposed current carrying parts, being done by others than electricians. The fullest protection should be given to workmen exposed to this hazard and should take the form of supervision by a foreman or expert who knows whether or not power is off and the clearance necessary for safety when the work approaches live circuits.

We have to also consider the operator of machinery who knows nothing of electricity beyond throwing in or pulling out a switch. This means the lathe operator in a machine shop or perhaps a conveyorman in a chipper building. Our job is not to give him a course in electrical power operation but to teach him a few things he must not do.

Mill Hazards

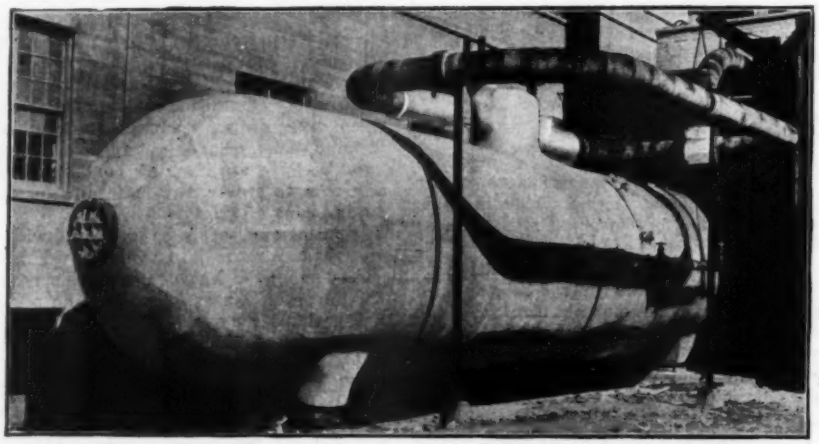
Steam Valves—There have been occasions in our own experience where men were burned to death in tanks because of the failure of the operating steam valves. There is no escape in a case of this kind when such a volume of steam will practically cook a man in a few seconds.

When steam is delivered under pressure to digester or bleaching tank where it is sometimes necessary for employees to go for inspection, repairs or cleaning, a safety valve should be installed between the operating and main valves, so located

*Read before the Paper and Pulp Section of The National Safety Council at the 17th Annual Congress in New York City, October 2, 1928.

THE RUTHS STEAM ACCUMULATOR

For Greater Productive Efficency



Ruths Accumulator installed at the Manitoba Paper Co., Ltd., Pine Falls, Manitoba,—
No. 100 of a total of 136 pulp and paper mill installations.

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as to be easy of access and plainly marked "Safety Valve." Whenever there is occasion for a workman to enter this tank or vat, he should personally see that the safety valve shuts off the steam and is properly tagged by him.

The Broke Beater—While a very innocent and harmless looking piece of equipment, as generally viewed, the broke beater is really a potential hazard. Less now than in the past because of more care being exercised in its handling, following fatal accidents in nearly every section of the country where paper mills operate.

Unless employees are carefully instructed, cautioned and watched, they have a tendency to lean too far over while feeding beaters, thus exposing themselves to the danger of being drawn in with the broke. And, not only will they lean toward the point of danger but will even climb into a beater to relieve congestion or plugged conditions of the stock by treading it down. Any practice of this nature becomes highly dangerous the second the man's feet leave the floor. The control of this hazard can be obtained only through continuous education and instruction by the supervising force.

Belts—The operation of taking off and putting on belts has been the cause of a great many accidents through employees undertaking to do this while machinery was in motion. When necessary to perform work of this kind, driving machinery or power should be stopped and where it is necessary to slow down or start up to do the required operation, the power should be regulated by a competent man, separate from the man actually handling the belt. It is true too, that regular belt inspection for condition and repairs when machinery is down, will do away with the necessity of much belt handling during operating hours.

Machine Felts—In nearly every paper mill accidents occur while washing felts, particularly so on the larger paper machines. Inasmuch as this operation is necessarily performed with the clothing on the machine, it is important that safe running boards, and when possible, handrails should be provided. If the running board cannot be used while the machine is operating but can be installed while the felts are being washed, a properly fitted removable board should be provided and used.

It is also important that every employee who performs work of this character be instructed how it can be done with the least possible hazard. Such instruction should be coupled with the actual work. One of the important features should consist of instructing the employee handling a running felt to keep his hands as far as possible away from the in-running bite or nip between the felt and felt roll. In other words, wherever it is not absolutely necessary to do otherwise, the location of the operator's hands on the felt should be as far as possible away from the point where it meets the felt roll.

Winders—Paper machine winders are a constant source of danger on account of their speed and the in-running nip, together with make shift devices which winder operators sometimes use. The practice of using rope on winder shafts to prevent rolls slipping is unnecessary as well as unsafe and should be discouraged. There is a tendency also in starting a reel to use a cloth or a piece of broke to drip water on the reel. The danger of this is that hanging cloth or broke may be drawn between the reel and the movement is so rapid that the workman's hand is usually drawn in with it. For this purpose it is recommended that sponges be used as they are so compact and suit the purpose even better than either cloth or broke.

When the reel is started the nip should be protected so that if a man stumbled and falls towards the winder he cannot drive his hand into it. A good practical guard consists of reinforced wire mesh in an angle iron frame about a foot wide and extending the width of the machine, installed to suit the particular type of winder on which it is to be used.

We know that today mills generally are well guarded to comply with State or Province labor regulations if nothing more. There remains, however, the human factor; lack of proper instruction, mental lapses and want of co-operation between departments or individuals, not intentionally, perhaps, but nevertheless a primary cause of numerous accidents.

The control of any condition of this sort rests with the Plant Safety Committee to devise ways and means for betterment and for the Department Heads and Foreman to translate into action whatever plan is adopted for correction.

Depreciation Charges Discussed

Methods of Providing and Accounting for Depreciation in Income Tax Returns

THE National Association of Cost Accountants has a New York Chapter which holds monthly meetings for the discussion of papers dealing with subjects of interest to professional accountants, executives and business men generally. The pulp and paper industry is represented on the directorate of the Chapter by G. A. Ware, assistant secretary of the News Print Service Bureau, who has kindly supplied THE PAPER INDUSTRY with an account of the proceedings of the first meeting of the fall and winter season, held in September at the Machinery Club, New York.

Giving Away Plant to Customers

The importance to business men of informing themselves fully on the various general aspects of cost accounting can be appreciated when it is known that many firms fail to allow enough depreciation in making up costs and profit and loss accounts. These firms may be giving away their plant or business to their customers without being aware of it. It is also true that in making out income tax returns without the help of a skilled accountant the government is often paid too much tax.

An Inexhaustible Topic

The principal speaker at the September meeting of the New York Chapter was Prof. T. H. Sanders, of the Graduate School of Business Administration of Harvard University, who took for his subject "Fixed Assets, Depreciation, Obsolescence and Maintenance".

Although an old topic for discussion by accountants, depreciation is one which can never be exhausted, for, as Professor Sanders reminded his audience, the Accountants Index contains some 330 pages of references to depreciation and it is well known that as high as 12 per cent of the disputes on income tax matters heard before the Internal Revenue Department are over proper charges for depreciation.

According to Professor Sanders, depreciation could be viewed in either one of three ways—namely, the exhaustion of the useful life of assets; the exhaustion of the capital investment in fixed assets, or the approportionment of the capital investment over the useful life of fixed assets.

Methods of Providing for Depreciation

Although accountants and business men take it for granted that a reasonable provision for depreciation should be made, yet on the one hand its farreaching consequences and application are only understood after a great deal of experience with it, and on the other hand there is much dispute as to the amount of provision that should be made and the manner in which it should be set up. These disputes arise for the most part out of confusion between what is desirable in the records as a matter of accounting policy, and what it is desirable to do about depreciation, maintenance, etc., as a matter of business policy.

There is, of course, no conflict between accounting policy and business policy when they are both understood in their proper spheres, but it certainly is possible and reasonable, for example, for a man to make the accounting provision in the records on the basis of the original cost of assets, and yet as a matter of business policy he may desire to make reserves in the business which are adequate to replace the assets at their reproduction costs.

Professor Sanders emphasized the fact that so far as the accounting records are concerned, their function is to record the facts concerning business transactions.

Accounting for Depreciation

There are two objects in the proper accounting for depreciation: (1) to obtain true operating costs, and (2) to state the facts for balance sheet purposes. The two views as to

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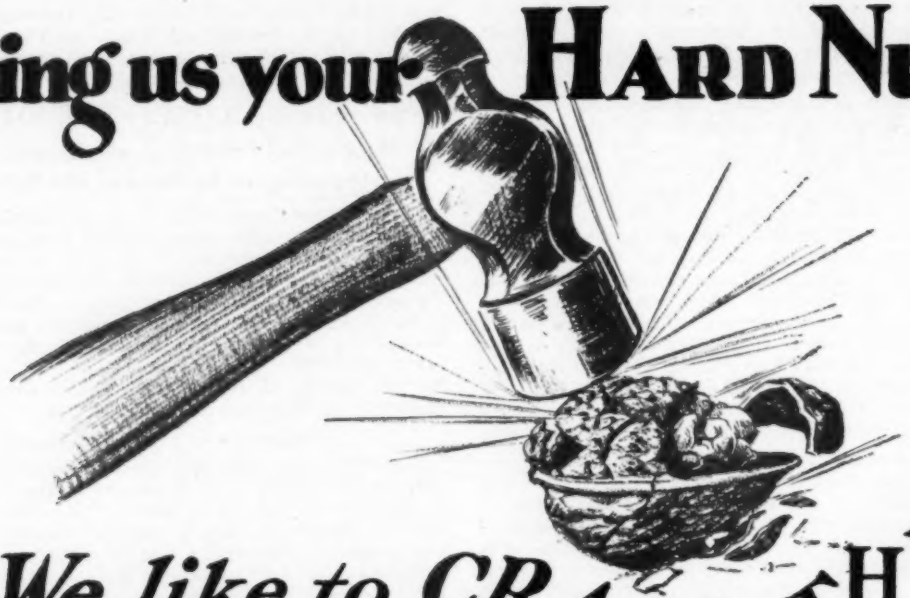

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OUR research and testing organization has just solved another vexatious problem for another paper mill superintendent....developed a way to a better finished, firmer sheet without radical change in equipment or added costs.

We've been doing this sort of thing for quite some time....not with a fanfare or flourish, but as a gesture of courtesy to some friend in the industry who had an idea but lacked the equipment to carry it through.

This department was established originally for testing and proving our own equipment. But more and more frequently it has been called on to solve a tricky point for some mill or individual who came to us for advice or assistance. It has shown a Southern mill a better way to utilize waste products from the cane fields; it has demonstrated to the government an improved method of preparing cellulose for explosives; again and again it has indicated time-savings and improvements which have been adopted successfully in several mills.

If *you* have a knotty problem, or a new slant on production, we'd be glad to try our wits and resources at it. Our equipment and technicians are at your command, confidentially, if you wish, and restricted only by our capacity. If you or the industry can benefit by their use, we shall feel amply repaid. Let us know how we can serve you.

NOBLE & WOOD
MACHINE COMPANY
Hoosick Falls New York

whether depreciation should be calculated on the original cost of fixed assets or on their replacement values, could be reconciled in the accounts by setting up the depreciation reserve based upon original cost, but as a matter of conservative business policy net profits would not be made available for dividends until after a further reserve was provided out of surplus to take care of the difference between the amount reserved for depreciation based upon original cost and the higher figure needed to provide for the investment taken at replacement values. Public utilities, especially the railroads, were referred to in view of the Interstate Commerce Commission rulings on the subject of depreciation.

Maintenance and Repairs

The policy followed in handling maintenance and repairs and the extent to which equipment is used, are two things which have an important bearing on the provision for depreciation. In some industries a plant operating 24 hours a day should allow higher reserves than one running only 8 hours. On the other hand, in certain cases some types of equipment are liable to depreciate just as heavily, if not more so, during times of idleness.

The place of depreciation on income tax returns was referred to since, as already stated, a large proportion of the disputes between taxpayers and the Internal Revenue Department arise from depreciation matters. The recent attempts of the Department of Revenue to standardize rates for depreciation in given industries was discussed. Mr. Grimes, a representative of the Internal Revenue Department, spoke on this subject at the last national convention of the cost accountants, and as he then stated, a certain leeway is permitted to individual taxpayers in an industry where average rates of depreciation have been agreed upon.

Value of Plant Ledgers

Professor Sanders discussed briefly the value of plant ledgers and said that in his opinion judgment should be used in their installation, keeping in mind the size of the plant. In all large plants they are necessary for many reasons, and often in the settlement of income tax returns. He thought that it was not necessary to figure depreciation individually on every item of equipment, such as the method followed in one plant he knew of. In this case some 60,000 cards were used to cover individual pieces of equipment, and depreciation was figured for each item. Assets of similar life could be grouped and the calculations brought down to a reasonable number.

Co-operation Between Engineers and Accountants

With regard to maintenance, he made a strong appeal for co-operation between the engineering staffs of the larger concerns with cost accountants. Through this co-operation, engineers can often point the way to the reduction of maintenance and repair charges, while the cost accountants can show in terms of cost the result of the policies followed.

As stated, meetings are held monthly by the National Association of Cost Accountants and they are very much worth attending by executives, accountants, cost accountants and others interested in the improvement of industrial conditions. Charles Rietel, of the University of Pittsburgh, is to be the speaker at the next meeting on the subject of "How Executives Can Obtain the Fullest Benefit from Cost Data".

Symposium on Timber Cruising

With the enhanced prices of standing timber during recent years, it has become increasingly necessary to determine values and quantities with greater precision. Modern cruising, while using essentially unchanged methods, is demanding more experienced personnel, greater accuracy in volume tables, and more intensive coverage of the forest. Forest owners are beginning to realize the importance of thorough and reliable data on their property and they are showing greater inclination to invest sufficient sums in cruising to insure the collection and computation of dependable data.

Cruising which originally involved only a timber inventory is now tending more and more toward the collection of data for use in the establishment of management plans and in the regulation of cut. The scope of cruising is being broadened to include data on growth and deterioration rates, logging costs, and many other elements to give a complete picture of the property as it is related to physical conditions and to possibilities of future wood crops.

A symposium on timber cruising based upon information contributed by thirty timber cruisers who have had extensive experience in all parts of the country appears in the October bulletin of the Woodlands Section of the American Paper and Pulp Association.

The Joint Committee on Aproved Pulp Testing Chemists has accepted Leslie K. Bickell, British Columbia Pulp & Paper Co., Port Alice, B. C., Canada, and Howard H. Harrison, Crystal Tissue Co., Middletown, Ohio, as approved mill pulp testing chemists.

The Whiting Corporation, Harvey, Ill., has appointed the D. S. Mair Machinery Company of Houston as its Texas agent to handle the complete Whiting and Swenson lines.

OHIO NEWS

Philip Carey Mfg. Co., Cincinnati, Ohio, to Build Large High Pressure Steam Plant

A project of unusual interest to industrial and public service companies has been announced by the Philip Carey Mfg. Co., Ohio, manufacturers of asbestos and magnesia high pressure steam pipe insulation, etc. At its Lockland, Ohio works, this company is to construct a boiler and power plant designed for 1800 lb. steam pressure, which will be the highest steam pressure ever used in America.

The main generating units will consist of two 500 h.p. vertical triple expansion, direct connected engines, operating with 1400 lb. pressure at the throttle, at a temperature of 800 degrees F., and exhausting against 60 lb. back pressure above the atmosphere. To each engine will be direct connected a 3 phase alternator.

This project was promoted by Ferguson Engineers of Chicago, who made an investigation and analysis of the steam and power conditions of the entire plant, which brought out new possibilities and these advanced ideas in industrial power development. The plans of development presented were so far ahead of the present practice in this line, that many months were consumed in promotion work and study of the plan. Mr. Ferguson and Max Paul, the company's engineer, made a trip abroad to investigate certain progress in other countries, which finally led to the undertaking of the project. Mr. Ferguson has been an outstanding promoter of industrial high pressure steam power developments.

All of the equipment for this plant wil be placed with American manufacturers, except the main engines which will be furnished by A. Borsig of Berlin, Germany. The high pressure steam generating equipment will be furnished by Combustion Engineering Corporation of New York, and will be constructed for 1800 lb. pressure. Integral economizers, water-cooled furnace walls, air preheaters, superheaters and pulverized fuel equipment will comprise these units. The construction work will be designed by and in charge of W. E. S. Dyer, consulting engineer, Philadelphia.

The operating cycle of this plant will make it one of the most efficient steam plants in the world.

A joint meeting of the Miami Valley Paper Manufacturers Ass'n and the Miami Valley section of Tappi and the Superintendents will be held November 22, 1928 at Middletown, Ohio. C. M. Baker, engineer of the Parent Association will speak on the subject, "Waste and Stream Purification". There will also be addresses from representatives of the Ohio State Board of Health.

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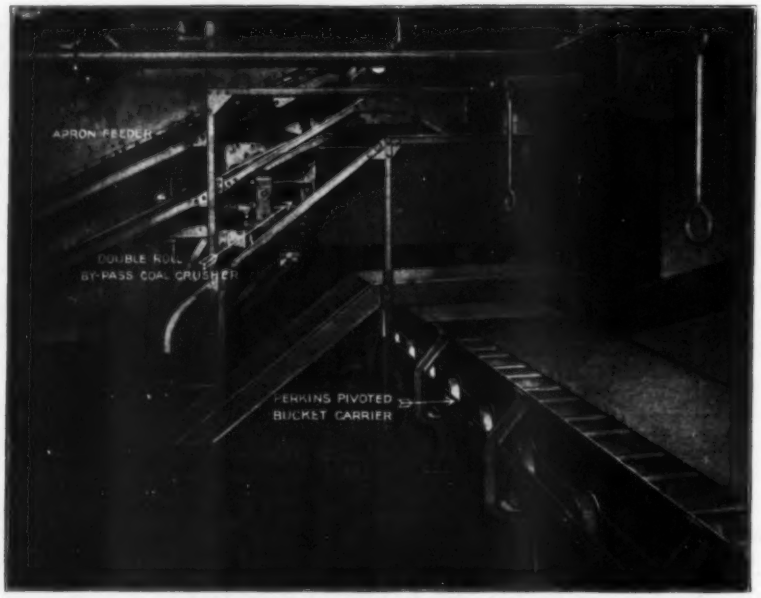
with
WEBSTER POWER HOUSE EQUIPMENT



A Complete Coal and Ash Handling Installation

When you provide Webster Coal and Ash Handling EQUIPMENT you get a service of known value. You are not speculating on unusual untried methods.

OVER FIFTY YEARS Experience in the designing and making of material handling EQUIPMENT for the large as well as small plants throughout the world.

WEBSTER ENGINEERS have given years of study to the correct handling of coal and ashes in power plants and can ably assist in making your equipment.

We also make a complete line of Elevating, Conveying and Power Transmitting Machinery for handling all kinds of raw materials and finished products.

A few of the WEBSTER PRODUCTS

ELEVATORS	MALLEABLE CHAIN
CONVEYORS	STEEL CHAIN
SHIPHOISTS	SPROCKETS
SCREENS	GEARS

HEAVY SHEET METAL WORK
STRUCTURAL STEEL WORK
HEAVY TRANSMISSION MACHINERY

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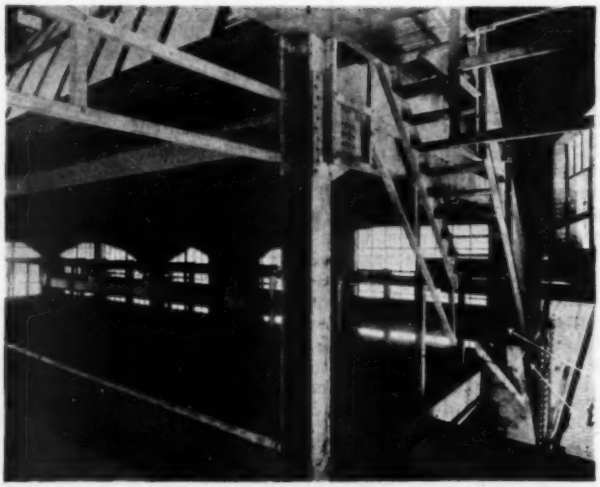
THE WEBSTER MANUFACTURING CO.
1856 N. Kostner Ave.
CHICAGO, ILL.

Webster-Inglis Ltd.
Toronto, Ont., Canada

Webster Brinkley Co.
Seattle, Wash.



Bucket Elevator and Spiral Conveyor Delivering Coal to Bunkers

WEBSTER
Write to
For Prices on Material Handling Equipment

The Month at Washington

THE right of a state to tax a non-resident creditor of a resident is about to be decided by the U. S. Supreme Court, the legal location of property rights in indebtedness being about to be determined by this decision (Francis Beidler vs. South Carolina Tax Commission, No. 39). The question is whether a debt owed by a corporation in one state to an individual or corporation in another state, is such property in the former as to be subject to taxes.

Program of International Aviation Conference—The program for the International Aeronautical Conference to be held in Washington Dec. 12-14, has just been announced by the Department of Commerce. The conference was suggested by President Coolidge for the interchange of views upon problems pertaining to aircraft in international commerce and trade, and is being held on the twenty-fifth anniversary of the flight of the Wright Brothers, which will be celebrated with fitting ceremony. Airports, private flying, competition, insurance, aeronautical research, aeronautical propaganda, aerial photography, airway development, etc. are to be discussed.

Clinkering Tendency of Ashes—The clinkering tendency of ashes has just been measured by the Bureau of Mines, which finds that fusibility is a measure of the operating troubles which can be directly attributed to the quality of the ash of coal burned on an underfed stoker. A series of tests was made using five semibituminous coals having different softening temperatures of the ash, but obtained from the same mining district. Similar operating conditions were maintained throughout the investigation and similar tests made with each coal. A summary of the results and observations shows that the quantity of clinker formed and the troubles attributable to clinker formation decreased as the softening temperature of the ash increased, that is to say, the coal having the ash of highest fusibility gave the least trouble.

Fire Resistance of Buildings—Tests conducted by the Bureau of Standards to obtain information on the fire resistance of various structures and materials are described in a statement just made public. It is pointed out that by applying materials, construction and devices of a known degree of effectiveness, structures can be made more or less immune to conflagrations, hurricanes, tornadoes, floods and similar catastrophes and yield protection to occupants or neighboring construction. The destructiveness of fire is pointed out as being more dependent on duration than on temperature. A copy of the report on these various tests may be had upon application to the Bureau.

Hand Stamping of Mail—The hand-stamping of permit indicia on third-class mail matter in bulk is not permissible, says the Post Office Department, in a recent ruling. The mail indicia must be printed. While it is desirable, when precancelled stamps are used to pay the postage on third-class matter mailed under this section, that the inscription "Sect. 435½, P. L. & R", also be printed, such inscription may be hand-stamped when it is not practicable for the mailer to have it printed.

The Air Mail—W. Irving Glover, second assistant Postmaster General, has just returned after an inspection trip of the air mail lines and reports that a great many concerns are now using the air mail for advertising purposes, not necessarily in great quantities but in smaller lots. Insurance agents and dealers in small lots of merchandise find the use of the air mail very successful in their respective lines of business. The passenger service is developing by leaps and bounds. It is interesting to note the large number of short haul passengers the lines are carrying.

Burning of Powdered Fuels—Problems involving the burning of powdered fuels are being the subject of investigation by the Bureau of Mines, one of the most important questions being that of the rate of burning of individual fuel particles. Two fundamental factors seem to influence this: first, the rate at which oxygen reaches the surface of the fuel, and secondly, the fraction of the oxygen molecules reaching the surface, which react. The first factor will depend upon the amount of turbulence and the rate of diffusion of oxygen molecules, the latter increasing approximately with the square root of the temperature. The second factor, in accordance with known characteristics of similar reactions, will depend upon temperature in a larger degree.

New Paper Fabric—An entirely new fabric has recently been produced in Germany, and while the exact composition of the new fabric is unknown, it includes paper, a textile fabric, and one or more metals. The top surface has the appearance of metal, but the back surface has the appearance of paper, and it may be bent or folded without cracking. It may also be embossed or printed upon by ordinary printing methods, and is made in a variety of colors. It is said not to oxidize or tarnish. It is claimed to have a wide range of uses, quality cardboards, confectionery boxes, trunk linings, fine packing of cosmetics, placards, etc.

Right to Discharge Employee—The U. S. Supreme Court in the case of C. A. Hansen vs. Stirrat & Goetz, No. 37, is about to decide the constitutionality of a state statute on a firm's right to discharge an employee at any time without liability. The employee was injured and in settlement of the damages a money consideration was paid and it was orally agreed to give the employee his old position at the same wage and as long as the employer continued in business.

Federal Trade Rulings—The clandestine violation of a trade practice conference rule by one who has openly subscribed to that rule, is an unfair method of competition within the meaning of the Federal Trade Commission Act, according to a ruling just laid down by the Commission, and in the future the secret violation of those rules which have been accepted by the Commission simply as an expression of opinion of the industry that the use of such practices constitutes unfair methods of competition, will call for action by the Commission even though the practice condemned by such rule has not heretofore been held violative of the act or by any court.

Rules of business conduct adopted by members of the waxed industry at a trade practice conference and recently acted on by the Federal Trade Commission, will become effective Nov. 15, instead of October 15, as formerly decided.

High Point of Money in Circulation—The high point of money in circulation is reached Saturday and the low point occurs on Wednesday of each week, the Federal Reserve Board has learned as the result of figures collected for the last four months. Large temporary increases are shown for holidays like July 4th and Labor Day.

Internal Revenue Rulings—Expenditures in connection with attending conventions, of railroad fares, hotel accommodations and meals, were recently allowed as deductions for income tax purposes in a decision by the U. S. Board of Tax Appeals which reversed the previous finding of the Internal Revenue Bureau disallowing such deductions. (Docket Nos. 14995 and 17662.)

Attorneys fees incurred in the defense of a suit by a former co-partner for an accounting of alleged partnership are deductible as a business expense under Section 214(a), according to a decision of the U. S. Supreme Court reversing the finding of the U. S. Court of Claims, published as Treasury Decision 4222 by the Internal Revenue Bureau.

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HOLYOKE

CALENDER ROLLS

Universally Recognized the Standard of Perfection

COTTON ROLLS—PAPER ROLLS—PAPER EMBOSSING ROLLS

For 55 years, Perkins Calender Rolls have been distinguished by marked individuality. Perkins methods of manufacture based on intimate knowledge of the requirements of the industry have produced rolls that are uniform, resilient and heat resisting.

Perkins Calender Rolls *stand heat better* and *wear longer.*

BUILDERS OF GOOD WILL AND SELLERS OF QUALITY
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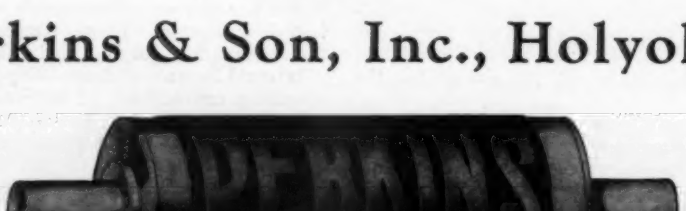


TRADE MARK REG. U.S. PAT. OFF.

EMBOSSING CALENDERS
SHEET CALENDERS
PLATERS
MULLEN PAPER TESTERS
TENSILE TESTERS
VENTILATING FANS
RAG CUTTERS
STOCK CUTTERS
PAPER DAMPENERS
BLEACH EJECTORS

Traveling expenses, meals and lodging while in Washington on official business were allowed as income tax deductions in another decision by the U. S. Board of Tax Appeals (No. 12748), reversing the findings of the Internal Revenue Bureau, disallowing such a deduction. "We are convinced", says the Board, "that the terms 'personal, living, or family expenses', referred to in section 215, supra, were intended by the Congress to be applied in the ordinary accepted sense of those words and not in the broad and sweeping sense in which the Internal Revenue Bureau is seeking to apply them. Simply because the amounts in question happen to be living expenses in a strict sense, does not prevent them from being deductible if they are ordinary and necessary, and are shown to have been incurred in carrying on his trade or business, and are clearly in addition to his living expenses at the usual place of abode which he maintains for his mother and sister. The Congress undoubtedly intended that the taxpayer's personal expenditures in maintaining his usual place of abode should not be deducted, but that all expenditures made by the taxpayer in addition to those amounts if incurred in carrying on a trade or business, should be deducted in determining net income".

The Treasury Department has been holding hearings aimed at simplifying its tax regulations, the type of return and information forms used under the taxing statutes, so as to make tax returns and procedure less intricate.

The first agreement on depreciation rates and methods of depreciation accounting, in accordance with the recent plan of the Bureau of Internal Revenue for co-operative studies with national organizations of industry, was made with the folding box group of the Paperboard Industries Association. Both rates and accounting methods for depreciation have been developed which are naturally acceptable to the majority of the members of this industry and the Bureau. Since then nearly 60 other industries have accepted the invitation of the commissioner of internal revenue to co-operate in studies of depreciation with a view to the publication of mutually satisfactory standard rates of depreciation and methods for depreciation accounting.

Recent Publications—"What to Do in Case of Accident" is the title of a recent publication issued by the U. S. Public Health Service (No. 21).

"The Children's Bureau" is the title of a booklet just issued by the Department of Labor, showing what it is, what it has done, and what it is doing for the United States.

"The Fourteenth Annual Report of the Federal Reserve Board" has just been released, covering operations for the year.

Interstate Commerce Rulings—The Interstate Commerce Commission has just concluded hearings with reference to the publication of rates on traffic between the U. S. and Canada, pursuant to a decision of the U. S. Supreme Court involving shipments of paper moving under joint through rates, in which Canadian and American railroads participated.

The Commission made public a proposed report in a proceeding on complaints involving the general structure of rates on printing and wrapping paper, paper board boxes and paper board in Central and Trunk-line territory, in which the trial examiner recommends a readjustment of rates on these articles on the basis of the scale proposed in the pending Eastern classification rate investigation to replace the present sixth-class rates.

Industrial Efficiency Promoted by Labor—A few outstanding labor unions now are co-operating with employers to improve the operating efficiency of industry, says the Bureau of Labor Statistics, known as "union-management co-operation", and a study of the subject (Bulletin No. 465) has just been released.

Taxpayers Urged to Co-operate—The taxing authorities of the Federal Government are making every effort to settle disputed tax cases through administrative means rather than by litigation, but their efforts in this direction thus far have met with only partial co-operation from the taxpayer, says the Treasury Department.

Third-Class Postal Rates Reduced—Rates for bulk mailing of identical pieces of third-class matter provided for in the Postal Rate Act of 1928, amount in some cases to a reduction of 33⅓ per cent from regular rates, says the Post Office Department, which enables the direct mail advertisers to enjoy more circulation at reduced cost. Particular attention is called to the reduced rate for bulk mailings of identical pieces of third-class matter and the arrangement for the acceptance of business reply cards and business reply envelopes without prepayment of postage. It seems that some features of the act are not yet fully understood.

The rate on bulk mailings of third-class matter is 12c a pound for circulars, miscellaneous printed matter, etc., and 8c a pound for books and catalogues having 24 or more pages, but in no case is the postage less than one cent for each piece. To be entitled to the minimum rate of one cent each, the individual pieces in a mailing of circulars, miscellaneous printed matter, etc., must run 12 or more to the pound, that is, they may not weigh more than one and one-third ounces each, while in the case of catalogues, books, etc., the individual pieces in a mailing must run eight or more to the pound, and may not exceed two ounces each to take the one cent rate. The pieces must not only be identical in weight, but as to contents and in all other respects as well.

In order that books and catalogues may enjoy the reduced rates, they should contain no unpermissible inclosures, the restrictions heretofore in force still prevailing.

Wholesale Prices—Continued upward movement of wholesale prices is shown for September according to a report just issued by the Bureau of Labor Statistics, by an increase of nearly 1¼ per cent. With 1926 as the basis of 100, the following change is shown for paper and pulp:

1927 Sept.	1928 Aug.	1928 Sept.	Purchasing power of the 1926 dollar in Sept., 1928 (cents)
92.4	88.8	88.8	112.6

Employment and Pay-rolls—Employment in manufacturing industries increased from 1.5 per cent in September as compared with August, while pay-roll totals increased 1.3 per cent, according to statistics compiled by the Department of Labor. With 1923 as the basis of 100, the following changes are shown for paper and printing:

Groups	Employment			Pay-roll totals		
	1927	1928		1927	1928	
	Sept.	Aug.	Sept.	Sept.	Aug.	Sept.
Paper and printing	103.4	101.7	102.1	111.7	110.7	112.5
Paper and pulp	93.3	90.2	90.5	96.7	96.3	96.2
Paper boxes	99.6	91.7	95.5	110.8	104.6	110.4

Bibliography on Advertising—The Domestic Commerce Division of the Department of Commerce has prepared a 10-page mimeographed bibliography on advertising which will be furnished without charge upon request.

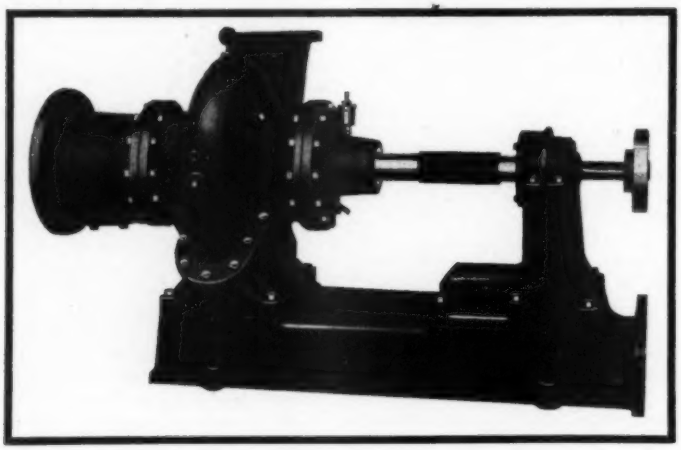
Annual Waste Week—A new "week" is to be added to the many "weeks" which business has adopted in its campaign to boost, stimulate and otherwise improve business conditions generally, and the new baby is to be christened "Waste Week", if plans now in the horizon take shape, with a view to curtailing waste in industry and business generally by having all employees point out during that week various things they have observed which when eliminated will produce potential savings.

Census of Industrial Purchases—The Department of Commerce has arranged to make a trial census of industrial purchases, i. e., the purchase by manufacturers of raw and semi-finished materials, supplies, and equipment, and as a supplement to the wholesale and retail distribution census heretofore made. This trial census is to be made in Cleveland.

Industrial Traffic Management Survey—The industrial traffic management survey now being conducted by the Department of Commerce is designed to benefit business concerns of all sizes and judging from evidence now coming to light in reply to the questionnaires, there will be plenty of material to carry out such intentions. Even the smallest of businesses, though they may not maintain a traffic department, certainly can profit by a thorough understanding of traffic problems. The Department incidentally is endeavoring to discover just how large a business should be to maintain a traffic department.

The F-M Paper Stock Pump

can solve your stock pumping problem



Better equipment leads to better methods

The superintendent knows:

that fast handling of stock solutions without separation of solids from liquids is a most important phase of the continuous, uninterrupted production necessary for efficient paper mill operation.

This Fairbanks-Morse Paper Stock Pump with its Patented Impeller gives continuous flow at a uniform pressure. Smooth passages without sharp edges pass stringy solids in solution without clogging or separation.

The F-M Paper Stock Pump has a high efficiency—high shut-off pressure and does not require frequent cleaning. A 45° split casing makes inspection a simple matter.

Fairbanks-Morse engineers can quickly show you how easily your stock pumping problem can be handled.

FAIRBANKS, MORSE & CO., Chicago

28 branches at your service throughout the United States

FAIRBANKS-MORSE

PUMPS · DIESEL ENGINES · MOTORS · SCALES

PA 18.18

Survey of Business Problems in New England—Application of the newer science of market analysis and business management, will largely solve the business problems that have faced New England since the war in industries that have not adapted their operations to the changed conditions, says the Department of Commerce, which is now making available the basic information necessary for applying modern and scientific marketing and management as a result of New England market studies, in the first of a series of pamphlets entitled "The Retailer and Consumer in New England".

New Catalogues, Books and Publications

Blaw-Knox Co., Pittsburgh, Pa.—A new three-color catalogue gives detailed descriptions of Blaw-Knox standard buildings of copper bearing galvanized steel for industrial plants. Many illustrations show standard unit construction in a wide range of sizes and shapes. Types with dimensions are suggested for various industries and uses.

Connersville Blower Co., Connersville, Ind.—A revised edition of bulletin 4D is descriptive of Connersville meters. There is a brief history of the development of the double impeller type of blower or pump, and of the rotary displacement meter. Also a description of the method of measurement, illustrations of Connersville features of design, including the very simple, yet effective bearing mounting, the rectangular inlet box, the standard register that reads direct in cubic feet, the P. V. T. T. Recorder that gives a complete record on one chart of the volume, pressure, and rate of flow. There is also a description of the Connersville Tandem Meter and Demand meter that record the maximum consumption on an hourly or a thirty minute interval.

General Electric Company, Schenectady, N. Y.—"Silent Gears", a new catalogue, gives an outline of how these gears are manufactured from fabroil and textolite. There are a number of illustrations, one showing the use of fabroil gears on a super-calender machine in a paper mill.

D. O. James Mfg. Co., Chicago—Catalogue No. 166 lists and describes every type of speed reducer made. There are 160 pages written in a simple, concise form with numerous illustrations.

Jeffrey Mfg. Co., Columbus, Ohio—A new Bucket Elevator Catalogue, No. 465, lists 184 bucket elevators of different styles and sizes, with capacities from 6½ to 750 tons an hour. There are engineering drawings illustrating the many types of chains, buckets and casings used in standard Jeffrey elevators; and twenty-two photographs showing the elevators doing almost every sort of work an elevator may perform. A new feature which is described is the silent ratchet safety lock that may be supplied with any bucket elevator.

Kalbfleisch Corp., New York City—A new chemical handbook is being distributed by this company, which is more than a catalogue as it contains 84 pages of chemical facts, valuable tables, and is freely illustrated. Being designed to simplify the purchase of chemicals, and to make it a more exact and economical operation, it is one which will be appreciated by purchasing agents. Copies on request.

Oakite Products, Inc., New York City—"Oakite in Paper Mills", is an interesting booklet just issued which describes the process of using Oakite cleaning compounds in cleaning paper mill machinery.

Swenson Evaporator Co., Harvey, Ill.—The new Swenson Forced Circulation Evaporator is described in a bulletin S 128 just issued. Copy on request to those interested in evaporator equipment.

Wagner Electric Corp., St. Louis—Wagner large RA single phase repulsion-induction motors are described in bulletin No. 157. There is a clear explanation of each part of the motor, and the text covers such subjects as type of single phase motors, history of repulsion-induction motors, operating principles, sleeve and ball bearing construction, ventilation, and construction features of stator and plate, rotor and rocker arm. Copy upon request.

C. H. Wheeler Manufacturing Co., Philadelphia, Pa.—"Radojet Air Pump" is the name of a new air pump which operates on the dry air principle. It is simple in construction and uses radial steam jets for the entrenchment of the air. The design and performance of this device are concisely set forth in a catalogue just out.

BOOK REVIEWS

The Manufacture of Pulp and Paper—Published by McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Volume IV of this series has been entirely revised and the second edition issued, Volume III, which deals with the manufacture and treatment of wood pulp was revised and enlarged in 1927. The two succeeding volumes which deal with the manufacture and testing of papers may be considered as two parts of one subject, and this has been taken advantage of in rearranging them somewhat, so that the entire subject of paper machines will be included in Volume V. This necessitated the transfer of the section on General Mill Equipment to Volume IV. The section on Coated Papers has been entirely rewritten. The subject of Engine (rosin) Sizing has also been rewritten and an appendix prepared covering Hydrogen-Ion Concentration. The new subjects—The Generation and Use of Steam and Paper-Making Details—have been added. Price $6.00 net, postpaid.

Finding and Stopping Waste in Modern Boiler Rooms—Published by Cochrane Corporation, Philadelphia, edited by Geo. H. Gibson. This is the third revised edition of this steam plant manual which is a reference book of text, tables and charts compiled from papers read before engineering societies, books, articles in technical periodicals, publications of the U. S. Bureau of Mines, and other original sources, and put into convenient form for owners, managers, engineers, firemen and others interested in increasing and maintaining boiler plant economy. There are five sections covering the subjects of fuels, combustion, heat absorption, boiler efficiency and testing, and feed water heating and conditioning. The final selection discusses recent practice in heat balancing, water conditioning and protection of the boiler and auxiliary equipment from scaling, embrittlement and corrosion. The work of a great number of investigators is critically digested and concisely presented in convenient form for ready reference. The book contains 804 pages, with numerous charts and illustrations. Price $3.00.

Chemical Engineering Catalog—Published by the Chemical Catalog Co., Inc., 419 Fourth Avenue at 29th St., New York City. The thirteenth annual edition (1928) of this catalogue contains in addition to the information published in former editions, a new Trade Name Index, which lists alphabetically trade names of advertisers in the catalogue. The classified Index of Equipment and Supplies has been completely revised and contains listings of more than two thousand manufacturers.

NORTHERN NEW YORK NEWS

Offer Taggart Corp. Stock

Public participation in the Taggart Corporation with mills in Oswego, Watertown and Carthage, to bring under single ownership and management a group of paper companies, has been effected through the distribution by F. L. Carlisle and Company of 20,000 shares of the corporation's $7 cumulative preferred stock and 50,000 shares of its no par value common stock. The preferred stock has been offered at $102.50 a share and accrued dividend and the common stock at $32.50. Both offerings have been oversubscribed.

The capitalization of the company consists of 100,000 shares of cumulative preferred stock of which 30,000 shares carrying 100,000 shares of Class A stock without par value and entitled to a $2 cumulative dividend, of which 30,000 shares are outstanding; and 1,000,000 shares of no par value common, of which 515,000 shares are outstanding and 30,000 reserved for exercise of common stock subscription warrants.

Taggart Corporation owns all the capital stocks of Taggart Brothers Inc., Taggart Oswego Paper and Bag Corporation and Champion Paper Corporation, which in turn owns all the capital stock of the Carthage Power Corporation. The plants of the company have an annual capacity of more than 50,000 tons of kraft and Manila rope paper, which is converted into multi-wall and other types of heavy paper bags. The total bag manufacturing capacity of the plants, upon completion of a new factory, now under construction, will amount to more than 200,000,000 bags annually.

The cement bag plant at Watertown has been closed. The machinery is being overhauled and will be installed in the Carthage mill where the production of bags will be resumed. The Carthage mill is known as the Champion Paper Corp. where paper for the bags is manufactured. The company has a sufficient stock of bags on hands to supply the market until the new mill is completed.

The plant at Watertown will be taken over by the Ontario Specialties, Inc., of Watertown, manufacturers of paper school supplies.

Decision in Government's Claim for Income Tax

In the matter of the Federal Government's claims against the now defunct Carthage Sulphite Pulp and Paper Co. for $96,721.49 of income taxes for the years 1917, 1918, 1920. 1922 and 1923, Judge Frederick H. Bryant of United States court has handed down a decision disallowing the claim of $61,518.68 for the year 1917 but allowing the claims for all the other years.

This decision comes as the result of the motion of Attorney Charles E. Norris as receiver of the Carthage Sulphite Pulp and Paper Co., for a dismissal of all of these claims of the Government for income taxes. The Government sought to have them preferred over the claims of other creditors and the ruling is in connection with the actions brought by two creditors, Reginald Hammond and the United States Mortgage & Trust Company against the Carthage company.

labor

costs less when beaters do more

You have to have practically the same number of men for a slow moving Hollander of limited capacity that you do for a modern Mid-West Hi-Speed Beater that turns out three times the amount of stuff.

The mathematics of the proposition is simple. Figure how much that would mean on your production costs.

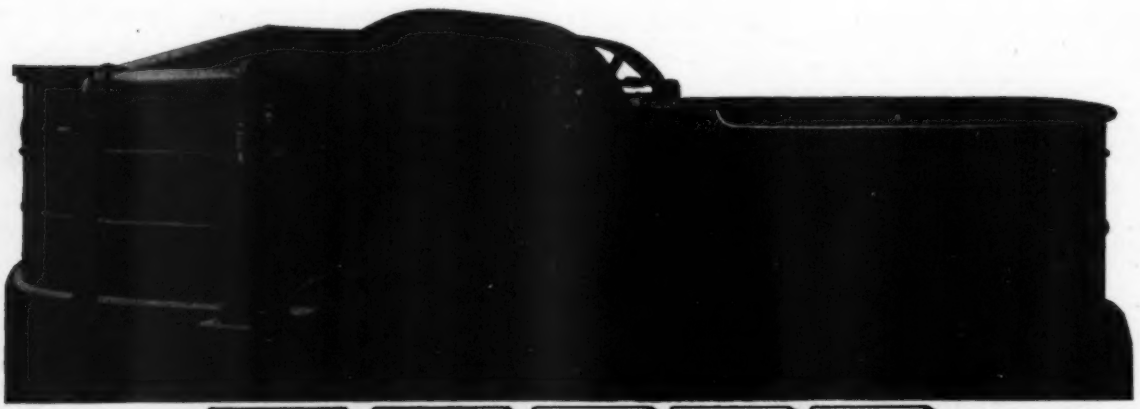
The saving in labor is but one item that helps cut production costs when Mid-West Beaters take the place of the old, slow-moving style of beater with its limited capacity.

Power costs and upkeep come down. Production goes up. There is more margin for profit and to meet competition.

The facts that demonstrate the savings possible in your mill, are facts worth asking for. Write for them.

THERE IS A WORLD OF DIFFERENCE IN BEATERS

THE MID-WEST MACHINE CO., DAYTON, OHIO



MID-WEST
PAPER MILL MACHINERY

The Government's claims for income taxes were filed with the receiver December 23, 1924, and Judge Bryant holds that the filing of them constituted commencement of a proceeding within the time specified by statute, for their collection.

Quarantine on Pine

A quarantine prohibiting the interstate movement of Scotch pine and certain other hard pines from nine counties of Northern New York on account of the Woodgate rust, became effective November 1.

The area from which the shipment of susceptible pines is prohibited includes, Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson Lewis, Oneida and St. Lawrence counties. Two heavily infected sections are known, one just southwest of the Adirondack Mountains, and the other in the extreme northeastern corner of the state. The disease is less generally distributed in other parts of the regulated area.

With a daily capacity of 65 tons of paper representing the finished product by the Oswego plant of the Taggart-Oswego Bag Co., it is planned to make a substantial increase in beater equipment to increase operations of the fourdrinier paper machine installed when the mill was erected. The plant is equipped with 14 beaters each with a capacity of 2,000 pounds of shredded pulp. It is not known how many new beaters will be added.

The Bagley and Sewall Co. of Watertown, will build a 234 inch fourdrinier machine for the Soviet government of Russia, according to a tentative agreement recently drawn when three Russian engineers visited the plant. This machine will be installed in a mill of the Russian government on the Volga River at Nizsniy Novgorod.

St. Regis Buys Old Terminal at Cape Vincent

The St. Regis Paper Co., Watertown, has just purchased from a realty company, the old pulpwood terminal located in Cape Vincent, formerly owned by the International Paper Co.

The property includes about six acres of land, and all equipment of the old terminal, also a trestle and concrete dock. The company expects to rehabilitate the property within the next two years.

George S. Kerr, of Kerr and Company of Campbelltown, N. S. has announced the purchase of seven canal barges suitable to ply in the Oswego canals to carry pulp from Oswego, N. Y. to Fulton for the Oswego Falls Corporation. It is estimated that close to 20,000 cords of pulp wood will come through the Port of Oswego next season.

Geo. Swichemler, an employee of the National Paper Products Co., Carthage, received a severe fracture of the right arm recently when a belt flew off a pulley while he was attempting to put it back on.

It is announced that the old paper mill of the International Paper Co. at Glen Park, N. Y. will be razed. The plant has long been idle and two of the buildings were recently damaged by fire.

Gillette Fibre Mills, Inc.

The Gillette Fibre Mills, Inc., has taken over the property of the Wood Flong Corp., manufacturers of matrix board, Stillwater, N. Y. The plant consists of three mills, boiler house and warehouse.

This company will manufacture electrical insulating fiber board and papers from processes which have been developed through years of research, by which it is claimed a fiber board is made that combines flexibility with a high degree of insulation and strength heretofore found only in rigid boards. Another product is a fiber trunk board, used in the manufacture of luggage.

The officers and directors of the company are: Harold R. Gillette, president; Randall J. LeBoeuf, Jr., Albany, vice president and general counsel; and Walter J. Zapf, treasurer and general manager. The stock is no par value and is held entirely by those interested in the enterprise.

BRITISH CORRESPONDENCE

Demand for Paper Remains Strong

The British papermaking industry is probably more fortunate than most other leading manufacturing activities because it has experienced no alteration in its unemployment percentage for some time, and, according to reports, there is no short time being worked in any section. In spite of the non-progressive state of the printing and associated businesses at the moment, the paper industry is still able to maintain its output, in fact there has been an increase in both imports and exports this year, and the home production figure is higher, although this does not necessarily signify increased activity in all sections.

Demands for writings and the higher-quality printings are below normal but increasing business is being done in newsprint, super-calendered printing, imitation art, coated art, and book-printing papers; this increase is accounted for largely by the frequent introduction of new publications and by the steady extension of the use of publicity in various forms on the part of the consumers of paper.

Wrapping paper manufacturers are doing extremely well at the present time, although other mills not interested in this branch before the imposition of the tariff have now turned their attention to this class of paper. Fortunately for this development the consumption of wrapping paper has developed to a remarkable extent, much of which is attributable to the better methods of packing employed, and the greater popularity of branded food products.

Esparto mills have been rather quiet, although some mills are experiencing a heavy demand for body papers for coating. Home demands to the wood-free mills are below normal for this time of year. Keen Continental competition has to be met; but prices on the home market are firm. In the fine writing section the position has been maintained, and export trade has improved. The exports in all writings for August were 21,433 hundredweight, as compared with 15,962 hundredweight in the same month last year. Australia is still Great Britain's best customer for this class of paper, while India is the next best.

For the first eight months of this year the total exports were 182,351 hundredweight against 164,688 for the same period last year. British writings sent to Canada are down as low as 2,078 hundredweight. The association of British Chambers of Commerce have recently decided to send a protest to the Secretary of State for the Dominions, and to the President of the Board of Trade pointing out the damage caused to the British paper industry by the arrangement enforced by the Canadian papermakers whereby dealers or merchants become pledged to refrain from sending orders to Great Britain for papers which can be made in Canada. The Edinburgh Chamber of Commerce has also taken this matter up with the Canadian Minister of Finance.

Discuss Durability of Paper

The durability of printing papers—a subject which has been mentioned from time to time in this correspondence—was one of the matters brought up for discussion at the annual conference of the Association of Special Libraries and Information Bureaus, held at New College, Oxford. Mr. Norman Parley of Percy Lund, Humphries, & Co., Ltd. said that every book and paper printed in these islands since 1870 is open to suspicion on the score of durability, and that there is likely to be a gap of fifty years in the records of our generation. He mentioned that several important publications had been printed on perishable mechanical pulp paper.

To remedy this situation, Mr. Parley put forward a resolution which was passed in the following form:—

Which Means —

The Finest in Paper Making Machinery

and

Our Continued Interest Cooperation and Effort to Make Bagley and Sewall Products the Most Satisfactory and Efficient Wherever Installed.

MANY OF OUR MODERN PAPER MACHINE DEVICES WILL MATERIALLY ASSIST TO INCREASE THE SPEED AND PRODUCTION ON OLDER EXISTING TYPES OF MACHINES

"The Library Association agreeing that the present position as regard deterioration of documents and printed matter in Public Record offices and libraries threatens to become extremely grave and that practical steps might be taken without serious difficulty to remedy this situation, hereby expresses its emphatic approval of the resolutions and recommendations of the Committee of Experts, approved by the International Committee on Intellectual Co-operation at Geneva, August, 1928, namely: 'That the attention of Governments (should) be drawn to the necessity of using for documents (and printed matter) of permanent value, and especially for those of an official character, only papers manufactured according to (given) specifications.' In support of the foregoing, it is further resolved that H. M. Government be asked to consider the establishment of a public testing station or a public standardizing committee for the purpose of fixing standards of durability for papers and other writing materials, and of publishing information on this subject with a view to the wide adoption of approved materials for manuscripts and printed matter of permanent value, and to consider the advisability of enforcing by statute the printing of books, etc., destined for the copyright libraries on papers of approved durability."

Mr. W. Bacon of Sindall and Bacon, consulting chemists and analysts to the paper trade put forward some suggestions as to materials which would produce more durable paper, and practical suggestions in a similar direction were also made by Captain Allan of Wiggins, Teape, and Alex: Pirie, Ltd.

Canadian Imports

Apropos the restriction on paper orders to Britain, it has recently been pointed out that, despite the strong position held by Canada as a paper-producing country, there are many grades of paper which are not manufactured in the Dominion, and although the bulk of this business is done by the United States, certain of these are supplied by the United Kingdom.

A correspondent of The Times points out that the United States holds certain natural advantages over her competitors; but British firms benefit by tariff discriminations, and there is little doubt that with greater effort on their part a more reasonable volume of the available business would be readily captured.

The following figures, showing the value of imports into Canada during 1926 and 1927, provide opportunity for interesting comparisons:

	1926	1927
Total imports	$9,987,374.	$11,921,192.
From United States	$7,737,999.	$ 9,193,009.
From United Kingdom	$1,239,374.	$ 1,518,296.

Two New Projects

Two important issues of capital in the paper industry have been announced in the leading British daily papers during the last few days. One announcement is put out by a Swiss company styled Paper Industries. This company has been formed to acquire the whole of the shares in a French company which is to erect a modern newsprint mill near Rouen, and take over the French import and distributing newsprint department of Messrs: Carl Thiel, Zurich, and Jacques Bachtold, Paris. The authorized capital is approximately $1575,000. Another new company—The Anglo-Foreign Pulp Co. is making an issue of 240,000 ordinary shares of £1. each and 240,000 deferred shares of 5 shillings each. This company which was formed in 1926 has been engaged in proving commercially the Rinman process of manufacturing woodpulp, by which, it is claimed, the cost of manufacture is reduced considerably by the recovery of valuable chemical by-products. Export reports included in the prospectus show that the results have been successful, and the authorized capital has been increased with the extending and developing the large potential business.

Interesting reports on the development of another woodpulp company were forthcoming at the statutory meeting of the Standard Woodpulp Co., Ltd., which was formed in May last. Mr. A. L. Sydney who presided pointed out that the principal object of the company was to double the plant to meet the increased demand for their woodpulp.

A Correction

In the July, 1928 issue of THE PAPER INDUSTRY a statement was published in this column to the effect that some thirty years ago when the making of wood pulp was not such an exact science as it is today, an attempt was made in the north of England to import the timber and turn it into wood pulp for papermaking, but it was not a success, and no further attempts have been made.

A reader who learned papermaking many years ago in England questioned this statement, and upon investigation it was found that the trade report from which this news came was in error. According to this veteran papermaker, nearly forty years ago the mill of Olive and Partington, Glossop, Derbyshire (4 machines) was changed over from strong fibers and esparto grass to an all bisulphite paper; making their own bleached bisulphite; and the Kelner Partington Pulp and Paper Co., (4 machines) commenced operations, making bisulphite papers. Both companies were very successful and from that time have made their own pulp.

Import and Export Figures

The undermentioned figures show the value of exports and imports of paper and paper-making materials during September, with the increases or decreases as compared with the same month of 1926 and 1927.

IMPORTS	Sept., 1928	Inc. (+) or Dec. (−) as compared with 1927	Inc. (+) or Dec. (−) as compared with 1926
Paper-making Material	829,435	—320,214	—325,499
Paper and Cardboard	1,435,847	—112,267	+291,269
Quantities of the same articles imported:	Sept., 1926.	Sept., 1927.	Sept., 1928.
Wood pulp, tons	148,290	138,522	110,285
Paper, cwt.	1,116,227	1,606,496	1,535,511

EXPORTS	Sept., 1928	Inc. (+) or Dec. (−) as compared with 1927	Inc. (+) or Dec. (−) as compared with 1926
Paper-making Materials	109,654	—7,121	+15,659
Paper and Cardboard	728,476	—79,883	—182,948
Quantities of the same materials exported:	1926.	1927.	1928.
Paper-making mater'ls, tons	13,446	15,172	13,819
Paper & Cardboard, cwt.	464,581	379,650	385,582

American Red Cross Roll Call

The paper trade in New York City again this year is cooperating actively with the American Red Cross in its roll call membership appeal, which opens annually on Armistice Day for the support of its extensive metropolitan welfare and relief and public health program.

Adam K. Luke of the West Virginia Pulp and Paper Co., again heads the activities as volunteer chairman of the special Paper Manufacturers and Dealers group and will follow essentially the same plan of intensive effort which brought such generous response from the personnel of the field under his chairmanship in the 1927 roll call.

This group is one of approximately 175 now being formed under the roll call plan of committee organization of the entire city. Each group, industrial, mercantile, or professional, will be directed as in the past by a representative leader in that field, serving as volunteer chairman, many of whom have already served in the same capacity in earlier Roll Calls.

Aid for the ex-service man and his dependents still constitutes a large factor of the Red Cross program in New York and government officials estimate that the peak of this work will not be reached before 1932. More than 3,345 disabled veterans, men still in service, and dependents received medical advice. Employment was found for 674 crippled or otherwise disabled veterans.

The Steadily Increasing Number of Installations of

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

IS DUE TO THEIR PROVEN ABILITY TO

Insure Desired Results
MORE ECONOMICALLY

Whether for the machine room, dryers, beater or grinder rooms, Ross apparatus is designed to fit in with your plant construction and present equipment. No radical changes in your layout are required.

When You Consider Installation and Operating Costs

you will find, as have the majority of leading mills, that a Ross designed and installed system will prove a sound investment that can be depended upon to provide maximum results, and pay for itself from the savings it effects.

Our Engineering Department Is The Headquarters For Assistance In Solving Heating, Ventilating and Drying Problems. Consult Our Nearest Office. No Obligation.

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NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

Canadian News

Crisis Approaching in Newsprint Industry

International Paper Co., of New York announced a few days ago that it would offer substantial price reductions to all customers, including those who have already signed their contracts for next year. A contract has been closed with the Hearst papers, the company announced, for a substantial tonnage of newsprint for several years at prices less than "our present contract prices for next year. This transaction involves no deviation from our practice of announcing standard prices."

The foregoing announcement confirms reports which were current in local newsprint and financial circles recently in all except the price understood to have figured in the Hearst contract. A few days previously, it was freely predicted that newsprint would be reduced to $50 per ton; and while officers of International Paper declined to state just the extent of the reduction, it is reported that the Hearst contract was arranged at $50.

It is quite obvious that International's action will establish the general price of newsprint for next year, for manufacturers with contracts calling for higher figures would only be losing their future market if they did not supply their customers at the price generally prevailing. The situation seems to be that, reason having failed to prevent over-production and cut-throat marketing, International has taken the bull by the horns and cut newsprint to a figure which may force a showdown.

Results are likely to be painful for companies without stable markets for their products, or with light financial resources and heavy funded debts. It seems altogether probable that the upshot of the whole matter will be further consolidated within the industry to a point where the marketing end of the industry can be handled sanely. It also seems quite likely that the various Provincial Governments have become sufficiently stirred over the present impasse that they will prevent its repetition when the crisis is over by refusing to indiscriminately grant limits to prospective manufacturers of newsprint.

Just what $50 newsprint will mean to the industry at large is difficult to judge, but the profits certainly will not be large, or anywhere near in keeping with the value of a great Canadian natural resource, which is being sacrificed. The plans which Phice Brothers is reported to be submitting to customers in the United States affords some figures to go on with respect to the meaning of $50 newsprint. Alternative plans are said to be offered. One for yearly contract embodies an agreement to adjust prices at the end of six months to the prevailing price of the three largest producers. The other, for five-year contracts, offers publishers a rebate of 25 per cent of any difference between the cost of paper and the contract price, with provision being made that when the contract price goes below Price Brothers' costs, the seller to absorb 75 per cent of the loss. Price Brothers guarantee that their costs will not exceed $56 per ton, consisting of $42.50 mill costs and $13.50 for overhead, while if costs are lower the publishers are to receive the full benefit. Price is a low-cost producer with an abundance of cheap power. It is understood that depreciation and taxes are not included in the item for "overhead", so it will be seen that a good deal could be taken from this maximum cost figure to arrive nearer at the real cost of production and still leave $50 per ton a very slim price for the product.

Canada as a whole, and Canadian investors in the newsprint stocks in particular, do not relish the present situation, and it is believed that the United States publishers, with a few exceptions, do not hail it as a favorable development. The theory of one New York publisher expressed to a Canadian newsprint man, it that the low prices which will obtain during the present upheaval will encourage wasteful habits among the users of paper. At the same time, the situation will develop to a point where the price can ultimately be increased to levels more equitable for all concerned and prove a disturbing factor for unprepared customers.

On the recommendation of A. Koroleff, manager of the Woodlands Section of the Canadian Pulp and Paper Association, there has been undertaken by that section a number of studies on the buoyancy and sinkage of pulp wood, including hard woods. Some of this work was started a year ago, but it will take another year before the study is completed. Mr. Koroleff says that six of their member companies had several thousand logs of spruce, balsam, jackpine, birch and poplar cut for the experiment at different seasons. These are accurately described as to their characteristics which affect their floatability and shrinkage. Two laboratories are participating in this study: the Forest Products Laboratories of Canada, at Ottawa, are conducting for the Woodlands Section a series of tests in tanks on factors affecting the floatability of wood; the Botany Department of McGill University, Montreal, is also making a study on wood structure, its effect on floatability, etc. Mr. Koroleff expects that a progress report of this study will be ready for presentation at the annual meeting to be held in Montreal at the end of January.

Difficult Problems Defer Newsprint Conference

Progress in making arrangements for the proposed conference between the premiers of Ontario and Quebec and the heads of the Canadian newsprint mills is admittedly slow on account of the very difficult problem that confronts all parties. Several of the mills that are operating to capacity are asking why they should be expected to give up any of the tonnage they have contracted for already for 1929, or are confident of securing, in order to raise the operating ratio of some other mills from 60, 65 or 80 per cent of capacity. The other mills, operating far below 100 per cent, maintain that they have stood firm in maintaining present prices in spite of losing some of their old tonnage through other mills "cutting in," and cannot be expected to continue into next year without making a real effort to secure new contracts and increase their operating ratio. Naturally, the premiers of Ontario and Quebec, both of whom are anxious to see a settlement of the present situation, do not feel like holding a conference until something definite is in sight in the way of a proposal.

On the other hand, it is reasonably clear that neither the government of Nova Scotia nor that of New Brunswick is likely to take part in such a conference. In each case, strong political pressure has been brought to bear to encourage the development of pulp and paper mills in the Maritime Provvinces, where the industry has made comparatively little progress as compared with the remarkable developments that have taken place in the provinces of Ontario and Quebec. In Nova Scotia the Mersey River Paper Co., controlled by I. W. Killam, of Montreal, is going ahead, while in New Brunswick International Paper Co. has already deferred the construction of a newsprint mill, to be associated with its St. John River Power Co., for a matter of two years; and this connection, along with the obvious desire of the government, is making it go ahead.

In the meantime, the unsatisfactory newsprint markets have had the effect of changing the output of some machines over to the production of other grades of paper. It is understood that the E. B. Eddy Co. has switched two of its news machines, having a daily capacity of 120 tons, to other grades of paper. It is understood also that the plant of the Canada Paper Co., at Windsor Mills, Que., is going off newsprint production and will confine its operations to the manufacture of fine paper. The Canada Paper's news capacity totaled 35 tons daily. While the declines in the productive capacities of the news mills are more or less insignificant as compared with

Norton Pulpstones

Grinding is an important operation in the manufacture of axes and cross-cut saws and keeps them sharp.

Norton pulpstones transform logs into fine even-grain pulp. Norton grinding wheels and grinding machines make mechanically perfect thousands of precision parts of the machinery of the logging industry.

NORTON COMPANY, Worcester, Mass.

Canadian Trade now Supplied from Canadian Plant.

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

a projected increase in the capacity of Canadian mills totaling some 1400 tons daily, yet even the switching of these few machines over to other grades is a trend, and one which has been even more evident in the United States.

But despite the over-expansion of the industry, the various newsprint producers appear to be operating on a satisfactory basis, although earnings of most of the companies this year will undoubtedly be decidedly lower than a year ago. This year, however, some of the companies signed up newsprint contracts which will allow them perhaps as great, or even greater profits than in 1927. These companies are the exception rather than the rule.

New Type of Pulpwood Carrier

A new type of pulpwood carrier for inland water service is being developed by John Reid, marine engineer of Montreal and London, Eng., who has specialized in this class of construction for many years past. In these new boats there will be only two hatches, each 60 feet long, so that the whole of the under deck cargo space is opened up for and aft, and across the ship, to the action of the loading and discharging equipment.

Mr. Reid has also invented a mechanical wood stacker, or stowing machine, now being tested. If successful, this will eliminate all manual handling of the logs in the hold or on the decks. It is estimated that a saving of time equal to one day per load carried will be effected by the new vessel and its special equipment.

Geoffrey E. Legge, paper agent, of Shanghai, has been visiting Canada for the purpose of augmenting his business affiliations in this country. At present he is agent in China for the Howard Smith Paper Mills, the Powell River Paper Co., and for other Canadian manufacturing concerns. Mr. Legge is co-operating in a demonstration shipment from a Canadian mill of newsprint packed in the usual Canadian style for export. The mill has undertaken to assume the responsibiltiy in the case of damage, but it feels a successful shipment and satisfactory arrival of goods packed as is customary for our export trade will be a great help all around in connection with the export of paper to China.

As a result of recent meetings between Canadian printers, lithographers, paper manufacturers and dealers. and envelope manufacturers, printers and lithographers have been circularized and a questionnaire has been sent to them, together with a folder giving the recommendations and conclusions arrived at by a joint committee studying the standardization of paper sizes, weights and grades.

The latest Government estimate of the remaining stand of available soft wood timber of all kinds in Canada is 597,000,000 cords.

QUEBEC

$12,500,000 Project on the Lièvre

James Maclaren Co., of Buckingham, between now and the spring of 1930 will expend approximately $12,500,000 upon the construction of a power development at High Falls, 23 miles north of Buckingham, where 120,000 horsepower will be developed; a 25,000,000 cubic feet storage reservoir at Cedar Rapids, 20 miles north of High Falls, and a pulp and paper mill, either at Masson or at Buckingham, with a capacity of 250 tons daily. In addition, the company intends, as requirements arise to utilize its power potentialities on the Lièvre River between its lumber mills at Buckingham and Masson, aggregating 150,000 horsepower.

The contract for the erection of the power plant at High Falls has been awarded to the Montreal firm of W. I. Bishop and Co., which is now sending in supplies and erecting construction camps at the site of the power development. Indication of the undertaking was given in these columns several months ago.

The power plant, which will be similar in construction to that of the Gatineau Power Co. at Chelsea, will be built at the foot of High Falls, where the existing dam will be raised 20 feet to give a total head of 180 feet. The power house will be equipped with an initial installation of three 30,000-horsepower units, and a fourth will be put in at a later date. The water of the Lièvre River will be backed up for a distance of twenty miles, but will not affect the surrounding country to any great extent, as for most of the distance the river runs through high banks, and the lower land is swamp land which will be transformed into small lakes studded with islands. Only about 156 families will be affected by the whole development.

As soon as the High Falls power development is properly under way, the Bishop Co. will commence upon the construction of a dam on the river at Cedar Rapids, for the creation of a storage reservoir which will regulate the river and provide a water storage of 25,000,000 cubic feet for the power plant. The dam at Cedar Rapids will be fifty feet high and will back the water of the Lièvre River as far as White Fish Lake.

Early next summer the Maclaren Co. expects to go ahead with the construction of a pulp and paper mill, to be located at either Buckingham, adjacent to its lumber and groundwood mills, or at Masson; if at the latter village, the two plants will be connected by a three-mile pipe line for pulp transmission from the groundwood mill, which is to be considerably enlarged. The paper mill will be equipped with two 234-inch machines with a capacity of 125 tons of newsprint daily each. A sulphite mill will also be constructed. This portion of the project will furnish employment for about 500 men and its construction will cost in the neighborhood of $6,000,000. The power from the High Falls plant will be used to operate the paper mill including the generation of steam. The paper mill is expected to be ready for operation late in 1930, and the contract for its construction will be awarded later on. The plans are being drawn up by Hardy S. Ferguson, consulting engineer, of New York.

Canada Power and Paper Corp. has deposited with the Department of Public Works, at Quebec, the plans of a dam which it intends to erect on the Trenche River, fifteen miles from its mouth, in an as-yet unsurveyed portion of Quebec County.

Thomas Maher, well known Quebec forestry engineer, has sailed from New York on the S. S. Homeric for a trip to Sweden and France. Mr. Maher will conduct an investigation of forestry methods in these two countries with a view of adapting some of them in Quebec.

George H. Millen

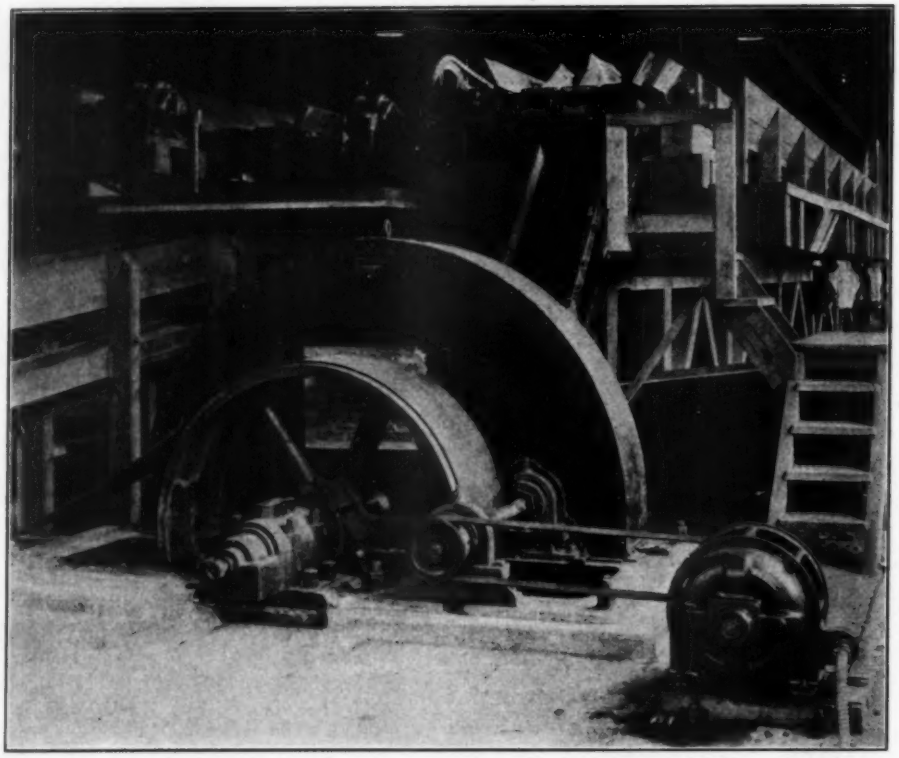
George H. Millen, president of the E. B. Eddy Company, Hull, Quebec, died at his home November 3, 1928, at the age of 90, following an illness which resulted from an injury received some time ago.

Mr. Millen was born at Glens Falls, N. Y., where he received his early education. Upon coming to Canada at the close of the Civil War, he took charge of a sawmill rented by Mr. Eddy. He saw the plant grow from a small sawmill to one of the large industries of the section, and became successively superintendent, director, manager and president of the company. Mr. Millen invented several machines for making matches.

Two sons and three daughters survive Mr. Millen.

Harland Engineering Co., of Montreal, has been awarded the contract by New Brunswick International Paper Co. for electrical drives on the four paper machines to be installed at its Dalhousie, N. B., mill, construction of which was started recently. There are to be four 234-inch machines, built by the Dominion Engineering Works, of Montreal. Two are to be proceeded with as part of the initial installation and the other two to follow. Harland Engineering Works are also supplying the motors for the extension to the St. Lawrence Paper Mills, at Three-Rivers, and have in hand a very large order for

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.



WOOD IDEAL CHIP BREAKER

installed in a Smith & Valley chipper for the reduction of western wood. The apparatus separates the carded masses of chips and loosens the good chips from the slivers, insuring a perfect knot rejection in the chip screens. The breaker also loosens all particles of dust and dirt that have been driven into the grain of the chips and dusts the entire chipper flow.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

improvements involved in the electrification of the new Welland Canal.

Western Quebec Paper Mills in Liquidation

The Western Quebec Paper Mills, of St. Andrews East, have gone into liquidation, and the concern is being wound up on petition of the creditors. It is understood that the claims total some $25,200, of which $16,000 is in notes held by the creditors, and the balance is a debt owing on power delivered. Interest has been paid to date on the bonded indebtedness of $225,000 and on debentures amounting to $125,000. The 10,000 shares of no-par-value common stock now outstanding are distributed among only seventeen shareholders.

The failure is attributed to high operating costs and heavy overhead charges, and it is said the losses during the past two years have been around $120,000. The company was originally formed to manufacture tissues, manifold and onion skin papers, excellent contract for which had been secured.

The Canadian Hydro-Electric Corporation, holding company of the Gatineau Power Co., a Canadian International Paper subsidiary, has recently made public the details of another large dam to control the waters of the Gatineau River. The Bitobi dam has been constructed at Baskatong, some 120 miles north of Ottawa, and this provides a storage basin estimated to contain 95 billion cubic feet of water. The new dam, which will be of crib construction, will be 80 miles farther north at the outlet of Lake Cabonga and will provide a storage basin about half the size of that provided by the Bitobi dam. The Foundation Co., of Montreal, has been awarded the contract for the work and is already engaged in trekking supplies into Cabonga Lake. The dam, it is expected will be completed next summer.

Smith and Crabtree Acquire Canada Paper

Canada Power and Paper Corp. has sold its plant at Windsor Mills to a new company, of which C. Howard Smith will be president and Harold Crabtree vice-president. This unit, originally a kraft producer, has produced 50 tons of newsprint per day. The new company will discontinue the production of newsprint and concentrate on kraft, m.g. wrapping paper and colored specialties. Bleached groundwood will be used in the manufacture of paper.

The equipment of the mill includes four fourdrinier paper machines, the widest trimmed sheet produced being 146 inches. The capacity is 100 tons of news, manilas, color and book papers per 24 hours. The pulp capacity is 60 tons of groundwood and 30 tons of soda pulp.

An interesting personal touch in connection with the deal is that Mr. Smith, the president of the new organization, entered the employ of the old Canada Paper Co. as a boy, when the company's warehouse was on Craig St., Montreal, on the site now occupied by the Bank of Montreal. He afterwards became a salesman and after some other connection established the business which bears his name and now occupies a commanding position in the fine paper manufacturing business. Now he goes back to the company with which he started as a boy, in the role of president.

It has been reported that Shawinigan Water and Power Co. has acquired the power site of the Brown Corporation at La Tuque, on the St. Maurice River. The site has a potential capacity of 140,000 horsepower, but at the present time only 4,400 horsepower is being developed to operate the Brown Corporation's sulphate pulp mill, which has a daily capacity of 240 tons. No confirmation of this rumor has been forthcoming; but if it is true, it means that Shawinigan controls all the power sites on the St. Maurice River.

Paper Utilities, Ltd., with a capital stock of $50,000 and headquarters in London, Ont., have been granted a federal charter to manufacture, sell and deal in all kinds of gummed tape sealing machines, printing machines, box making machines, gummed tape paper, paper specialties, containers, novelties, etc.

ONTARIO

New Owner Visits Merritton Mill

C. Howard Smith, of Montreal, head of the Howard Smith Paper Mills, and owner of the Lincoln and Lybster plants of the Lincoln Pulp and Paper Co. at Merritton, which he recently acquired, visited Merritton last month. In an interview he said that there was a great future for the plant and that they had plans for enlargement to keep pace with the growth of the country. One of the difficulties to be overcome was the problem of better water and this would be remedied in the near future.

In his various plants Mr. Smith has a payroll of $1,250,000 a year. At the two mills at Merritton, which he has just acquired, there is an annual payroll of $350,000. The company will manufacture specialties of various kinds. The plant originally was never designed for anything else. The Canadian market is expanding and the domestic paper industry of the company must expand to meet the growing demand.

The old disused mill of the Kinleith Paper Co., at St. Catharines, is also owned by Mr. Smith's company. Asked as to what disposition will be made of the property, he said there were no plans and lack of water and railway siding necessitated the closing of the plant. The organization is being kept intact, however, and the charter is alive, but nothing could be said as to future prospects.

K. S. Maclachlan, general manager of the Lincoln Pulp and Paper Mills, spent several hours with Mr. Smith, who declared that the company should have two machines in the Lybster mill. One interesting feature which Mr. Smith discovered in his tour of the Lincoln mill was a picture on the wall of the manager and a group of employees who have been with the company for twenty-five years or more.

With the starting up last month of the new plant in Toronto, Canadian Paperboard Co. will increase its total output by some 150 tons a day. This marks the most recent step in the development of a company which started operations twenty-five years ago and has grown from a small beginning to its present status, that of being the largest manufacturer of paperboard in Canada. Plants are also located at Frankford and Campbellford, Ont., and at Montreal. The company owns water rights on the Lachine Canal and on the Trent River at Frankford and Campbellford. The last annual report of the company showed net earnings of $198,027 before making provision for bond interest and depreciation.

Engineers appointed by the governments of the United States and Canada to assist the International Joint Commission in the technical details of the investigation concerning the levels of Rainy Lake and its tributary waters expect to file with the Commission in the course of the next two months certain physical data, according to L. A. Burpee, Canadian secretary of the Commission. It had been hoped that the engineers would have not only these particular data, but have completed their report before this, but the conditions of the inquiry made this impracticable. The investigation was undertaken largely because of proposals for plant extensions made by the Backus pulp and paper mill interests.

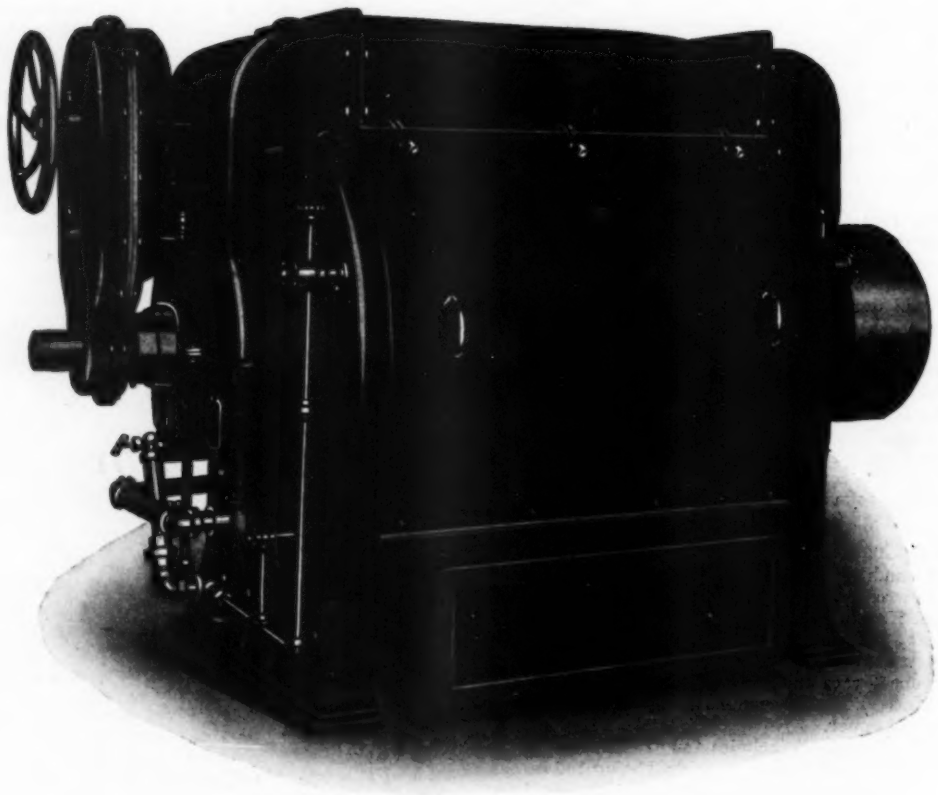
Firstbrook to Enlarge Area of New Plant

An indication of the activity of the package manufacturing industry is the decision of the directors of the Firstbrook Boxes, Ltd., to enlarge the ground area of the new plant now being erected at Mount Dennis, near Toronto, from 130,000 to 160,000 square feet. Increasing volume of business and orders in sight, together with the rising requirements of commercial houses throughout the Dominion, made this course advisable, particularly as such expansion during construction is more economical and practical than plant additions at a later date, with their attendant disruptions to manufacturing processes.

Work on the new plant was commenced some weeks ago. Excavation has been finished, the concrete flooring is well

REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

under way, and the siding connecting with the Canadian Pacific Railway's tracks is already in operation, The heavy timbers used for cross sections of the buildings have arrived from the Pacific Coast, and there is thus every reason to anticipate that the plant will be ready as per schedule for active operation early in the new year.

Accompanied by H. Kieffer, chief of the Forest Protection Service of the Province of Quebec, and other members of the Canadian Forestry Association, G. C. Piché, chief of the Quebec Provincial Forestry Service, recently visited the territory controlled by the Niagara Park Commission and the nursery and plantation around Williamston, Ont. As a result of his visit, Mr. Piché considers that the nurseries and plantation which he saw are adequate proof that reforestation is a practical enterprise.

D. G. Calvert, general manager of the Fort William Paper Co., of Fort William, when asked last month regarding the re-opening of the Fort William mills, which were closed down early this summer, said that he had no information on the subject. He added that as soon as the newsprint situation rights itself the mill would start operations again. That time, he said, might not be far distant.

According to an announcement by C. E. Jackson, manager of the Thunder Bay Paper Co., the company's newsprint mill at Bare Point, Port Arthur, has been temporarily shut down; but it is hoped that operations will be resumed some time this month. In the meantime, the Current River groundwood mill is being run as usual, and the wood room at the Bare Point mill has not been shut down. Permanent employment is guaranteed to a payroll of between 100 and 150 men. A portion of the wages will be paid to a large number of the paper mill employees as long as they are out of employment.

Don Valley Paper Mills, Toronto, which was recently acquired by Norman E. Wainright, formerly with Provincial Paper, Ltd., has opened an office in the old Standard Stock Exchange building, King St., W., Toronto.

Abitibi Jottings

The sale of 81 square miles of pulpwood and jackpine in the Township of Simpson, north of Sault Ste. Marie, to the Abitibi Power and Paper Co. and the Algoma Central Railway was announced recently by the Department of Lands and Forests. The purchase was a joint one, the pulpwood on the property to be used by the paper company and the ties to go to the railway. A Government stipulation providing that pulpwood be taken off at the same time as the jackpine on account of the fire hazard is said to be the reason for the joint purchase.

A new record for continuous operation without a break was established last month by No. 2 machine at the Iroquois Falls mill, when it ran one hundred and twenty-seven and a half hours without a break, from 12.20 a. m. Monday until 7.50 a. m. the following Sunday, thus beating the 105-hour record set by No. 7 machine in the same mill a short time previously.

Another paper machine is being put in operation at the Espanola Division of the company, where for some time past only one of the six machines has been running. There are now three out of four machines in operation at the Sault Ste. Marie Division.

Last month the offices of the Lincoln Pulp and Paper Co., Ltd., of Ritchie and Ramsay, Ltd., and of the Georgetown Coated Paper Mills, Ltd., were all transferred to the same office in the Atlas Building, Toronto. The Companies named have been amalgamated under the name of Alliance Paper Mills, Ltd.

As a result of three recent outbreaks of fire in the same paper box factory at Guelph, all of which took place on a Sunday or a holiday, and for which no plausible cause could be attributed except spontaneous combustion, E. P. Heaton, Ontario Fire Marshall, submitted samples to Prof. L. Rogers, Ontario Government Analyst. The latter has announced his investigation showed that paper box cuttings in bales are liable to spontaneous combustion, and if mixed with other factory refuse, such as oily rags, constitute a dangerous fire hazard. The firm concerned is taking additional precautions, as regards the handling of waste, and bales will in future be stored in an isolated building.

Isaac H. Weldon

Isaac H. Weldon, native of Woodstock and prominent in connection with several Canadian paper companies, died in Toronto on October 17th at the age of 52 years. He was president of Provincial Papers, Ltd., vice-president and treasurer of the Interlake Tissue Mills and president and treasurer of the Barber Co.

Mr. Weldon laid the foundation of his comprehensive knowledge of the pulp and paper business with the E. B. Eddy Co., of Hull, Que., which he joined when a young man. He later was connected with the Laurentide Company, which he left for the Burgess Sulphite Co. of Portland, Me., and Boston. Since returning to Canada over 20 years ago, he resided in Toronto.

Surviving are his widow, three sisters and one brother.

Frank Sims, who for several years has been assistant superintendent of the paper mill of Provincial Paper, Ltd., at Port Arthur, has been made superintendent, succeeding L. F. Knickerbocker, who resigned recently after six years' service to become associated with the International Paper Co., of New York.

MANITOBA

Several important changes have been made in the staff of Provincial Paper Sales, Ltd., at Winnipeg. H. B. Kirby, for the past eight years manager of the Calgary branch, has been made sales manager of the company, with headquarters in Winnipeg. He joined the company in 1927. W. J. Thompson, for thirteen years manager of the Edmonton Branch, has been appointed manager at Calgary. George Hatch who has been with the company for many years at Winnipeg, has been appointed manager at Edmonton.

NEW BRUNSWICK

Suit Settled Out of Court

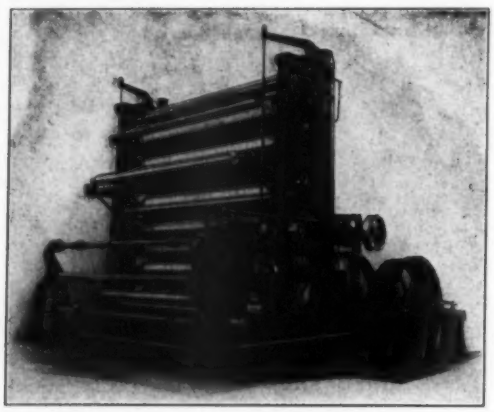
The suit at Chancery of Sir James Dunn vs. Angus McLean and the Bathurst Co., in which action for $110,000 was brought by the plaintiff as the result of an alleged abrogation of an option on 2000 shares of the company's stock, was settled by the principals in the case, after hearings had been started at Fredericton, last month. The terms of settlement were not made public, Sir James Dunn and Angus McLean having agreed that nothing concerning the matter would be given out.

The $110,000 asked by the plaintiff represented the difference between $55 a share for 2000 shares, the price specified in an option claimed by Sir James Dunn to have been taken by him, and $110 a share for which the stock was finally sold to Montreal financial interests.

Grand Falls Plant Started Up

On September 30th the first 20,000 horsepower unit of the Grand Falls power plant of the St. John River Power Co., an International Paper subsidiary, was put into operation; and the following day, in accordance with the terms of an agreement with the Fraser Companies, power was delivered to the pulp and paper mill at Edmundston. On the same day both the pulp mill and the power plant were visited by His Excellency Lord Willingdon, Governor-General of Canada.

An Unusual Chance To Get Real Help!



YOU frequently run up against problems that are real stickers—that require a lot of hard thought, research and expensive experimenting before you can find a satisfactory solution. Yet, these very problems have probably come up in some other mill—and have been satisfactorily solved. What a Godsend it would be to the Company pocketbook and your own peace of mind if you knew the mills that had met and overcome the same problems, and had the benefit of their experience.

This is precisely what you can have—for the mere asking. Norwood's men have been developing and building paper mill machinery for close to 40 years. During this time they have naturally acquired a vast knowledge and experience in meeting varied conditions of mill operation. They have run up against most of the problems in the filtration of water and the finishing of paper, and have had a hand in their solution.

Coupled with this valuable experience has been a constant growing of the Norwood spirit of co-operation, which is a simple but important basic policy with us. Here's how it works: You want the real dope on some particular problem. Maybe you want to know how much money you can save by motorizing your platers, or possibly you are having trouble with pollution of the water entering your plant, or have some other problem dealing with water filtration or involving calenders, platers, dusters, suction boxes, dampeners or brushing engines. Just write, 'phone or wire us and give us the details. We'll give you the full benefit of our experience, wholeheartedly, and if the urgency and importance of your problem warrants it we'll quite likely send an engineer right away to go over the whole problem with you.

You Can't Go Wrong With A Norwood Installation of

Filters
Calenders
Platers
Dusters
Rag Thrashers
Folding Machines
Suction Boxes
or other equipment

Catalogs, Illustrations and Specifications on Request.

This is Norwood Co-operation. We give it to you freely—not because we are altruistic—but because we've spent the last third of a century working with paper mill men, and we know that if you are thinking of replacements or need additional equipment you'll select the best equipment for your purpose. The best is naturally Norwood—built on experience to stand the gaff and give long and satisfactory service.

Norwood Engineering Co., Florence, Mass.

NORWOOD

Work is proceeding rapidly on the construction of the new International mill at Dalhousie. All the equipment needed by the Domill Construction Co., chief contractors for the project, is now on the ground and in operation. In recent weeks about 150 men have been employed in the preliminary work, and this number is expected to increase to about 1000 when the major building activities are under way. All the temporary buildings have been finished, including bunk houses, cook house, office house, several buildings for storing materials, machine shop buildings, building used as a power plant and a carpenter shop.

Fraser Plans Greater Expansion

From quarters close to Fraser Companies, Ltd., it is understood that the organization has now practically rounded out the program of physical development which was financed some months ago. The large addition to the plants has resulted in an all-round increase in efficiency, a lowering of operating costs, and the creation of a greater earning power. Some time ago the management predicted that there would be an earning power set up against the common of around $5.00 per share for this year and double that in 1929. Results to date are understood to be fully up to expectations. Since the estimate was made, moreover, certain other developments have worked out, among these being the securing by the company of a large interest in the Rolland Paper Co., the leading producer of fine papers operating exclusively in the Province of Quebec. Not only does Fraser intend to supply Rolland with a large portion of its bleached sulphite requirements in the future, but it will also co-operate with it in the matter of sales expansion in Eastern Canada, with Rolland handling certain of the products of Fraser.

The first catalogue paper machine was started in the Edmundston mill last month, as was also the new board machine in the Madawaska, Me., mill. As a result of the expansion in the output of the pulp and paper mills at Edmundston and Madawaska, the company is building thirty new houses at Edmundston to house the additional employees who are required to operate the mills. The work on construction of the houses is being rushed in order to assure their completion before winter sets in.

The company is now starting to work on the construction of a $2,500,000 bleached sulphite mill at Athol, a suburb of Campbellton. The concrete foundations are to be completed this fall and steel structural work is to be started in the spring. The mill will have a daily capacity of 150 tons and will require about 100,000 cords of pulpwood annually. It is expected that at least 250 men will be given continuous employment, and the main mill, comprising conveyors, digesters and power plant, is to be completed next year, so that operation may be commenced before the close of 1929.

The collapse of an old acid tank, that was being demolished, resulted in serious injuries to Frank Davidson of Pleasant Point, at the Nashwaak pulp mill, Fairville. Edward Ferris, also of Pleasant Point, was shaken up and sustained a broken ankle in the same fall, which was from a height of about 25 feet.

B. J. Roberts, secretary of the Department of Finance, R. M. Brown, Acting Director of Forestry, and J. Chisholm, Department of Justice, Ottawa, have been appointed commissioners to inquire into the claim of Robert W. McClellan, barrister, Fredericton, for renumeration in connection with his services as pulpwood commissioner.

NOVA SCOTIA

Construction of Mersey Mill Progressing

W. C. Pitfield, vice-president and general manager of the Royal Securities Corp., of Halifax, who is a director of the Mersey Paper Co., in company with president C. H. L. Jones

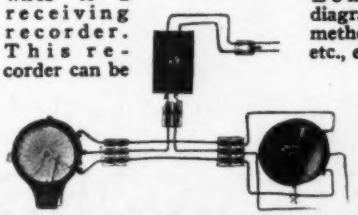
New Bristol's Catalog

gives interesting story of how Long Distance System centralizes operating information at the point of control.

THE full benefit of using Bristol's Long Distance Transmitting and Recording System is better realized when one considers the instant contact it gives with operating conditions in all parts of the plant or system. Very often it is vitally necessary to know the exact head of water being maintained in distant lakes, reservoirs, rivers, etc., or the action of head gates at out-of-the-way places not conveniently accessible by ordinary means.

In such instances a continual survey of existing conditions is provided by the Bristol's Long Distance System; the transmitting unit being installed at the source of Liquid Level, Mechanical Motion, etc., to be measured, and connected by means of three wires to a receiving recorder. This recorder can be mounted at any conveniently centralized point desired—at a distance of a few hundred feet away or even up to several miles—(successful installation has been made with transmitter and receiver eighteen miles apart). On the receiving instrument chart is recorded an exact duplication of conditions prevailing at the transmitter.

How Bristol's Long Distance equipment is being used to advantage in many industrial plants, utility systems, etc., is described fully in new catalog No. 1900, pictures above. Also included in complete listing of Indicating and Recording Instrument models which can be furnished—full size chart reproduction with actual records taken in field service—listing of charts in various ranges for use with Long Distance Systems—diagrams illustrating different methods of hook-up possible, etc., etc.

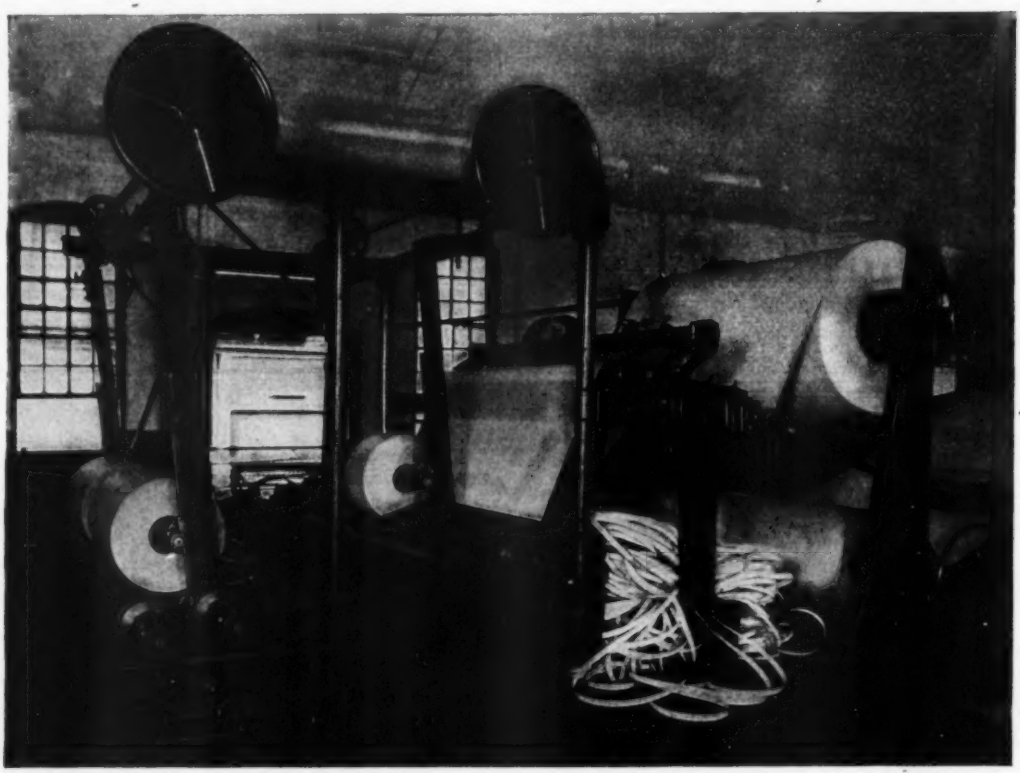


Diagrammatic hook-up of Bristol's Long Distance System for Pressure. Left: Indicating Transmitter; right: Recording Receiver.

A copy of Catalog No. 1900 will be mailed to any interested person in your plant. Send us name and address.

The Bristol Co.
Waterbury, Conn.

The Winder for the Board Mills



Moore & White Heavy Type Four-Drum Winder in Mill of Eddy Paper Co., Three Rivers, Mich.

The Heavy type Four-Drum Winder shown above is especially built for winding board up to .050″ point, and in large diameter rolls up to 60″ diameter. With this type Winder hard, straight rolls can be made without telescoping or wrinkling. Tear-outs can be made in independent rolls without affecting other rolls, thereby eliminating waste. This Winder is one of three operating at Eddy Paper Co., Three Rivers, Michigan. Winding direct from paper machine Reels.

A FEW USERS

Pioneer Paper Co.	United Paperboard Co.
Paperboard Corp.	Terre Haute Paper Co.
Gardner & Harvey Co.	Congoleum Co.
Fort Wayne Corrugated Paper Co.	Ohio Box Board Co.
Mac Sim Bar Paper Co.	Eddy Paper Co.
Arrowhead Mills.	Hinde & Dauch Paper Co.
Falulah Paper Co.	Ball Bros.
Paraffine Company	American Coating Mills

THE MOORE & WHITE CO.

Established 1885

No. Philadelphia Station, Penna. R. R. Phila., Pa., U. S. A.

of the latter company and J. C. MacKeen and a party of engineers recently visited the scene of the paper company's construction operations at Brooklyn, Queen's County, N. S. They were well pleased with the progress that has been made.

About 60 per cent of the grading and fill of the mill site has been completed. Work on the dock is going forward rapidly, the piling having been completed and some of the crib work. Structural steel for the job has been ordered from the Dominion Bridge Co. and will be fabricated at the Robb Engineering Works at Amherst, and will be delivered early this month. The steel and crib work should be in full swing towards the middle of the month. The Canadian National Railway has already moved the Brooklyn railway station and is carrying on track work in connection with the railway connections for the mill.

George F. Hardy, of New York, consulting engineer of the company, recently paid a visit to the scene of operations to make a progress inspection of the job.

Work on the construction of the Avon Pulp and Paper Co.'s mills at Hantsport is steadily progressing and indications are that the plant will be in operation in November. Large quantities of pulpwood are now being brought to the mill and nearly 2000 cords have been assembled.

NEW YORK CITY NEWS

Flintkote Buys Beckman-Dawson Co.

The Flintkote Co., manufacturer of roofing and building paper and felt and allied asphaltic products, with headquarters in Boston, Mass., and mills in several cities, has acquired the Beckman-Dawson Roofing Co., according to announcement made in New York a few days ago. This is the first step in the Fintkote Company's program of expansion, and follows swiftly upon the recent announcement of the company's alliance with the Royal Dutch Shell group of companies. About two years ago the Flintkote Co. acquired the roofing businesses of the Richardson Co. and the Chatfield Manufacturing Co. The addition of the Beckman-Dawson Co. to the Flintkote group of companies brings Flintkote's total sales volume close to the $19,000,000 mark.

There will be no change in the conduct of the Beckman-Dawson business, which will be operated as in the past by the present Beckman-Dawson management and organization. Representatives of the Flintkote group will be added to the Beckman-Dawson board of directors. There is reason to believe, it is said, that announcement of other increases in the membership of the Flintkote group may be looked for in the near future.

The International Paper Company, with headquarters in New York City, has started to build a paper bag plant at Mobile, Ala., which will have an annual capacity of about 28,000 tons of grocery bags and printed specialties. The plant is being built by the Continental Paper and Bag Corporation, a subsidiary of the International, in conjunction with the kraft paper mill which the International is erecting at Mobile.

William Fisher Etherington, president of W. F. Etherington & Co., Inc., paper merchants of 50 East Forty-second street, New York, died on October 12 at his residence, 430 Park avenue, New York, at the age of 74 years. Mr. Etherington was also vice president of the M. T. Richardson Company, and was widely known in the paper industry.

The Mitchell Paper Stock Co., Inc., dealer in papermakers' supplies of 13 Gansevoort St., New York, has leased the adjoining four-story building, and with the added facilities afforded by the new building will be able to increase its production of paper stock considerably.

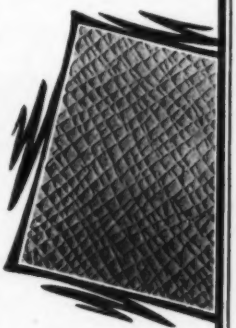
A new incorporation just recorded is that of the Embassy

For Distinctive Effects

WALDRON EMBOSSERS

"Spanish Leather."

"Flower" Pattern.



"Snakeskin."

Good Embossing Improves Product and Stimulates Sales

When you consider the importance and sales value of beauty in processed papers, you can then realize the absolute necessity of insuring better appearance and "feel" of your product.

The large variety of beautiful embossed effects and the superior quality of actual engraving now being secured, is in large part the result of the correctly made paper rolls and correctly proportioned machines, that are designed and built by Waldron.

The benefit of the knowledge gained from a century of experience and possessed only by Waldron embossing specialists is surely worth securing. Consult us without obligation.

Write for 20-page book on "Embossing."

JOHN WALDRON CORPORATION

Main Office and Works—New Brunswick, N. J.

30 East 42nd St., NEW YORK
208 W. Washington Street, CHICAGO
303 Lumbermens Bldg., PORTLAND, ORE.

New Birks Bldg.—Montreal, Can.

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

Cordage and Paper Co., of New York City, chartered under New York State laws with a capital of $15,000 to deal in paper and twine. The company is represented by H. W. Dernstein, of 100 East Forty-second street, New York.

The Johns Manville Corporation and subsidiary companies report their consolidated net income for the third quarter of this year at $1,722,451 after all charges and Federal income taxes. This compares with $1,600,438 for the preceding quarter and $772,705 for the first quarter of this year. For the first nine months of this year the consolidated net income amounted to $4,095,595.

The Bear Mountain Tissue Mills, of Cornwall, N. Y., have been incorporated under New York State laws with a capitalization of $350,000 of preferred stock and 12,500 shares of no par common stock to manufacture paper and paper products. The new corporation is represented by A. Furman, of 1457 Broadway, New York City.

The St. Maurice Valley Paper Co., Ltd., whose New York City offices are now located at 420 Lexington Ave., New York, has leased new quarters in the new New York Central Building at Park Avenue and Forty-fifth St., on the twenty-eighth floor, and will move to the new offices as soon as they are ready for occupancy.

MICHIGAN NEWS

Watervliet Mill Machine Rebuilt

The rebuilding of the original paper machine at the Watervliet Paper Co. is completed and regular production is now under way. This unit ran smoothly on its original tryout, and has been speeded up to a possible maximum of 700 feet a minute from the original 375 feet.

Superintendent Clarence L. Harter now places the output at 50 tons each 24 hours for the entire mill, which is double that of years past.

J. V. Boland and Co., St. Louis, are now working on the new concrete stack and report it nearly finished. It will be 150 feet high, 13½ feet in diameter at the bottom, and eight feet, eight inches at the top.

The Sutherland Paper Co. will make a very attractive display of its products at the National Dairy Exposition, which will be held at the Cleveland Auditorium, October 15 to 20. George Heisler, general sales manager and L. W. Sutherland, president, will attend the show.

Superintendents Hold First Meeting

The Michigan Division of the American Pulp and Paper Mill Superintendents Association held its first meeting of the season, October 18. This meeting was an all-around success.

Frank B. Eilers of the Orr Felt and Blanket Co., Piqua, Ohio gave an illustrated talk on "The Making of Paper Mill Felts". Mr. Eilers brought out many interesting points.

The following officers of the association were re-elected for the ensuing year: M. J. Redmond, Kalamazoo Paper Co., chairman; Clarence Thorne, Watervliet Paper Co., 1st vice-chairman; Clarence Harter, Watervliet Paper Co., as 2d vice-chairman; Wm. Siewert, Michigan Carton Co., 3d vice-chairman; and George H. Pountain, Bryant Paper Co., secretary-treasurer.

Many interesting meetings are planned for the coming year.

Damage amounting to several thousand dollars resulted from a fire which broke out in the paper stock warehouse at the Standard Paper Company. A similar fire took place in the same warehouse recently. Cause of the blaze is unknown.

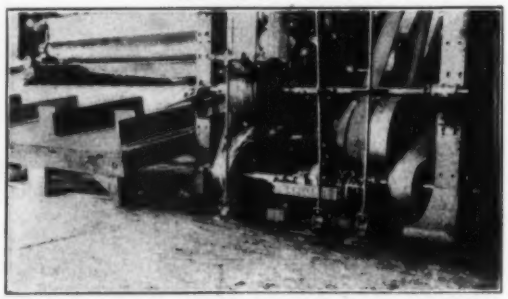
A 24 inch 12 ply Cincinnatus Belt driving an 84 x 84 Breaker Beater in the plant of the Continental Paper Company, Bogota, New Jersey.

The Toughest Test

Here is a tough drive—probably as tough as demanded of any belt.
Two leather belts lasted 3 weeks each—but a year and a half continuous and satisfactory service was given on the same drive by Cincinnatus.
Worn? Yes—and why not—after this record service. It's demonstrations like these that have given Cincinnatus the preference in leading American plants. Cincinnatus is built specially to meet the needs of the paper industry—and even on a Lenix drive, such as illustrated, it shows to good advantage. Its construction reduces stretch to an absolute minimum.
Write us about your special belting needs.

The Cincinnati Rubber Mfg. Co.,
Cincinnati, Ohio
New York Chicago Pittsburgh Detroit

LEWELLEN
Variable Speed
TRANSMISSION

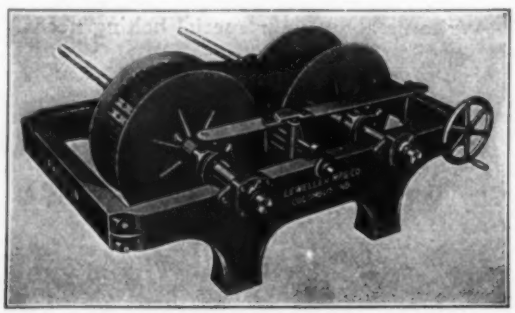


A LEWELLEN Variable Speed Transmission operating Strap Carrier on Board Mill at Standard Paper Co., Kalamazoo, Michigan.

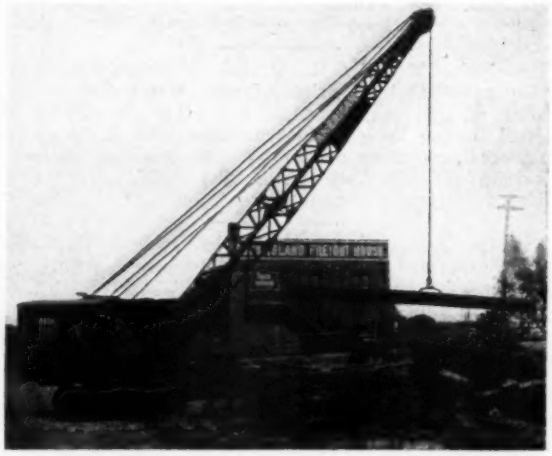
The LEWELLEN Variable Speed Transmission, when applied to cutter, winder, strap carrier, embosser, printer, etc., will pay for itself many times during its life. It speeds up production, insures accuracy, reduces spoilage, and in many ways proves a profitable investment.

With the LEWELLEN Transmission on the job you can secure the precise speed required, to get the best results from your operation. The LEWELLEN is designed right, and built right. It costs very little more than the usual speed changing devices, and you will find it superior to any other, from every standpoint.

Write us and tell us your speed control problem. Let us work it out for you, and quote prices on your particular job. This will not obligate you in any way.



Lewellen Manufacturing Co.
COLUMBUS, INDIANA



"AMERICAN GOPHER" Shovel-Crane—An All-Steel, All-Purpose Machine

The "AMERICAN GOPHER" Shovel-Crane, the all-steel machine with the low up-keep cost, is the very last word in crawler type shovel-cranes, possessing many advantages over machines you may have used in the past.

The following are just a few of the superior features of the "AMERICAN GOPHER" Shovel-Crane.

All heavy duty shafts are chrome steel; heat treated;
All shafting over-size;
SKF Ball Bearings used wherever practicable;
All castings annealed, carbon or alloy steel;
All spur gears above deck have cut teeth;
Fewer parts; less danger of delay;
Parts are interchangeable wherever possible;
Crawler treads, cast chrome steel;
Machinery deck, one large single-piece casting;
High pressure lubrication used all over the machine.

The "AMERICAN GOPHER" Shovel-Crane makes an ideal utility crane for use around industrial plants. Speedy, strong and accurate at all kinds of grab and hook work. Tracks don't mean a thing to it; travels cross-lots anywhere.

Available for a wide range of work.

New catalog now ready.
Shall we send you a copy?

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.

PACIFIC COAST NEWS

WASHINGTON

Rainier Recapitalization Rumored

A report was current in the Northwest last month that The Ranier Pulp and Paper company with mills at Shelton, Wash., is contemplating a plan of recapitalization which provides for the retirement by redemption of exchange of the present bonds, notes, preferred stock and common stock and the issuance of 100,000 shares of Class A and 123,000 shares of Class B common. It is further stated that the net earnings, applicable to the payment of the $2 class A dividend, are at an annual rate equivalent to $6.49 per share, and after providing for the $2 dividend on both class A and class B shares, the balance is at the annual rate of 91 cents per share on the two classes of stock.

The plant, which was completed in July 1927, is located on a tract of land, 16 acres in size, with a tidewater fronting. It has a daily capacity of 125 tons of unbleached sulphite or 115 tons of bleached pulp, and is said to be one of the lowest cost pulp products on the coast, running at full capacity. In addition to the mill and tract of land, the company owns a wood pulp plant, a warehouse and docks. The machinery is of the latest design and the buildings are all constructed of concrete. The supply of raw material is obtained from adjacent saw mills, which, it is said, will assure the plant of low cost supplies for twenty years.

Owners of this company are among the outstanding paper and pulp men on the coast and includes Isadore Zellerbach, M. R. Higgins, E. M. Mills, J. D. Zellerbach, H. L. Zellerbach, all of whom are active officers in the Crown-Zellerbach corporation and Senator Mark E. Reed, president of the Simpson Logging Co.

According to a recent statement issued by its auditors. Lybrand, Ross Bros. & Montgomery, the net earnings of the Rainier Pulp and Paper Co., for the first five months of the current fiscal year, after all charges, including depreciation and federal income taxes, were at an annual rate of $649,620.91.

The first pulp to be shipped from the Grays Harbor district in Washington to a foreign country was shipped late in October from the Grays Harbor Pulp company to Japan. This shipment consisted of 500 tons of pulp. It was stated that the Japanese order was the first commercial shipment made by the company as all previous consignments have been of test material, to eastern mills. This concern will ship another consignment to Maine shortly, it was announced.

Late in October the filling of a large slough which runs from the company's holdings in East Hoquiam to 25th street was started by the Grays Harbor Pulp and Paper company, in compliance with an agreement made with the city officials when franchise rights were granted to the concern. The project will bring the entire slough area, including streets, alleys and private holdings, up to street grade. The work is to be performed under the direction of the city engineer, according to terms of the agreement.

The Willapa Pulp and Paper Mills of Raymond, Wash., awarded a $800,000 contract for pulp machinery installation in the Willapa plant, providing for a 75-ton capacity unit, last month to the Swenson Evaporator Co., pulp and paper machinery manufacturers and subsidiary of the Whiting Corporation, Harvey, Ill. P. B. Sadtler, president of the company, was in Portland, the company's headquarters, to personally receive the order.

An announcement was recently made that a government aviation expert is expected in Willapa Harbor during November to investigate the possibility of locating an airport between South Bend and Raymond, which is expected to be of enormous industrial value to that vicinity. In case the

New, better, enlarged edition

Every reader of THE PAPER INDUSTRY *is entitled to a copy provided he is in any way responsible for power transmission results.*

Preceding editions of "The Belt that puts the Pull in the Pulley" are well known all over the world. This new edition (which is the sixth) is **more than twice as large.**

If you are a user of belts, electric motors, or transmission of any kind that might involve the use of belts, this new 68 page treatise will be found very helpful.

The booklet tells plainly why modern VIM Leather Belting is so decidedly superior to old-fashioned Oak Leather Belting. It illustrates and describes a number of very simple tests that anyone can make with his hands, on a glass top desk, in an ordinary vise, with a speed counter, in a bucket of hot water, over a flame, and on an emery wheel. A college laboratory is not necessary to prove the superiority of VIM.

However, don't suspect that VIM ever sidesteps college laboratory tests or any other kind of tests. And wherever VIM has been tested under **actual working conditions** alongside of the best substitute and oak leather belt obtainable in the world, VIM has also **invariably** won out.

Remember, please, that you are always welcome to the services of a Houghton Man. He will gladly call to go over your power transmission problems with you without making you feel obligated in the least.

E. F. HOUGHTON & COMPANY

P. O. Box 6913 North Philadelphia, Pa.

And all over the world

Fill in, tear off, and mail

E. F. Houghton & Co.,
P. O. Box 6913
North Philadelphia, Pa.

Please send a copy of "The Belt that puts the Pull in the Pulley" to

Name .....

Firm .....

Position .....

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Character of Goods made .....

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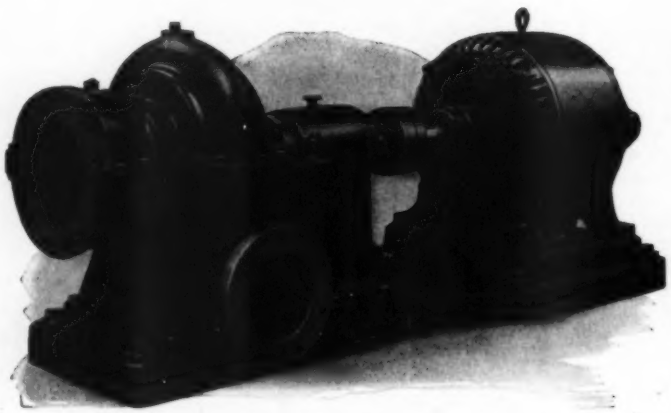
PI-C27-68

NEW DEVELOPMENTS IN PAPER STOCK PUMPING ARE OF INTEREST TO PAPER MILLS



In this connection the improved Allis-Chalmers Paper Stock Pump merits your investigation.

You can obtain from us on request, a data sheet for outlining your paper stock pumping requirement for our recommendations.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.

The open worm gears are also Horsburgh & Scott gears. The worm has 10 teeth and is hardened and ground all over. The worm gear has 17 teeth and is made of special bronze. Ratio 1.7 to 1.

DRIVE IT WITH GEARS

WORM GEAR SPEED REDUCERS

Series 1200 Type WB Horsburgh & Scott Worm Gear Speed Reducer driving a grinder. The service is severe as the machine is reversed every 30 seconds by a reversing friction clutch between the motor and the speed reducer. Speed 1200 r.p.m., ratio 30 to 1, 5 H.P.

A quiet smooth flow of power with only two moving parts.

Write for bulletins describing these gears and reducers.

The Horsburgh & Scott Co.

5114 Hamilton Ave. *"Gear Makers Since '89"* **Cleveland, U. S. A.**

Gears for Every Industrial Purpose—Worm—Bevel—Herringbone—Spur—Spiral—Hardened Heat Treated Gears —Non-Metallic Gears and Pinions

site is found satisfactory, an effort will be made to have it purchased by the Willapa Harbor port commissioners.

National Paper Prods. Operate First Unit

On October 6 the National Paper Products Co., began the operation of the first unit of its mills at Port Townsend, Wash. This unit which has a daily capacity of 100 tons of sulphate pulp and test lines, was begun in September a year ago and in June of this year it was decided to begin the second unit which will be completed early next year. When completed, the mill will have a capacity of 200 tons daily, the second unit to contain a Beloit fourdrinier and Bagley and Sewall dryers. Draft paper is to be produced in the second unit on the 248 inch paper machine. J. D. Zellerbach, president of the company, made a personal inspection of the mills at the time of the opening. He was accompanied on his trip north by N. M. Brisbois, general operating manager of the Fibreboard Products, Inc., who supervised the initial operations of the mill.

For the first time since July, the Port Angeles Wash. mill of the Fibreboard Inc., resumed capacity operations last month. During the slack period of the past three months, repairs in the way of new roofing over a great part of the mill, were made.

The sulphite pulp mill of the Shaffer Box Company at Tacoma, Wash., is practically completed and the manufacture of pulp will start at once.

Operations at the new sulphite pulp mill of the Union Bag and Paper Power Corp. of Tacoma, are expected to begin this month and C. P. McMillen, president, is expected to arrive from the East for the opening.

The Casade Paper Co. of Tacoma, Wash. last month took on the services of Georges W. Forrester who will function in a managerial capacity. Mr. Forrester was for several years with the International Paper Co. and later with the Trinity Bag and Paper Corp. of New York.

Announcement was made recently by A. H. Dougall, president of the Dougall Woodfibre Co. that the groundwood mill which they recently purchased at Edmonds, Wash. will be put into operation shortly. This mill, with a daily capacity of 40 tons, formerly known as the Occident Pulp and Paper Co., was completed in the spring of 1927 and since then has only operated at intervals. The new concern, in addition to purchasing the mill, has acquired property adjacent the mill which has water frontage. Other officers of the company are J. K. Dougall, treasurer and J. H. Templeton, secretary.

OREGON

Pacific Loggers Congress

The problems of the pulp industry from the viewpoint of loggers were discussed in one session during the annual Pacific Loggers Congress held in Portland, Ore., during the last week in October. Among the speakers who talked before the delegates at this session was J. J. Donovan, lumberman of Bellingham, Wash., who proposed tariff protection against European pulp which is being dumped on the market at less than the cost of American production. This he advised in order to strengthen and build up the pulp and paper industry on the Pacific Coast.

Pointing out the fact that America imports nearly one-half of its consumption in newsprint, finished paper, all grades of pulp and some pulp wood, and, that the three states of Washington, Oregon and California, possessing one-half of the standing timber, and nearly one-half of the water power of the country, produce only 8 per cent of the pulpwood.

The question immediately arises why these enormous imports of pulp and paper when it is possible for the three

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

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STEEL

BECAUSE OF THE USE OF FINEST GRADE OF LONG STAPLE COTTON IN BUTTERWORTH ROLLS FOR COATED WORK AND ONLY THE FINEST QUALITY OF PAPER IN BUTTERWORTH ROLLS FOR SUPER AND GLASSINE BUTTERWORTH CALENDER ROLLS

ARE REGULARLY GIVING HUNDREDS OF HOURS OF EXTRA SERVICE.

Order a Butterworth roll next time —or have your next refill made by Butterworth. The same high grade of material is used in new and refilled rolls.

BUTTERWORTH COTTON ROLL FINEST LONG STAPLE COTTON

H. W. BUTTERWORTH & SONS CO.

Established 1820

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BUTTERWORTH CALENDER ROLLS

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In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

Class BI Stock Pump
Horizontal Split-Single Suction

STOCK PUMPS
AGITATOR PUMPS
FOR ALL CONDITIONS

As we were among the first to develop a horizontal split, single suction stock pump, we have been thru the development stage and now have a stock pump which includes ALL the desired up-to-date features.

We also make a screw agitator pump for use in successfully agitating the present day high consistencies of stock.

WRITE for complete information.

HAYTON PUMP & BLOWER CO.
Appleton, Wis.

Speed Production With DAYTONS

Securing a new customer may be a tribute to the salesman, but receiving that customer's repeat order is a compliment to the product itself.

For which reason we announce that approximately 80% of the nearly 400 Dayton High Speed Beaters now "speeding production" in some seventy odd mills represents repeat business—a truly wonderful tribute to this particular product.

Incidentally there are more Daytons in the mills of America and Canada than the entire field of competitive high speed builders can account for—further evidence that the Dayton ACTUALLY DOES dominate.

Entirely new equipment or old type engines reconstructed.
GET THE FACTS.

The Dayton Beater & Hoist Co.,
Dayton, Ohio

E. K. Mansfield Co.,
501 5th Ave., New York, N. Y.

DAYTON
HIGH SPEED BEATERS

Pacific states to produce it? The answer is that eight years ago when the tariff bill was framed the great newspapers, publishing houses and political farmers united to strip wood industries of any vestige of protection. Lumber, shingles, pulp, pulpwood and newsprint were placed on the free list, in the name of conservation—a false cry.

The result is depression in these industries at home and the importation during the current year of about $400,000,000 worth of these products, three-fourths of which could have been produced at home. When the next tariff bill is drawn in 1929, these industries will be heard from in congress or know the reason why. Pulp makers will have an especially clear case.

E. T. Allen, of the Western Forestry and Conservation association with headquarters in Portland, declared that by first sending crews into stands that are going to be logged to remove growth not suited for saw logs, considerable saving could be made in timber suitable for paper-making. A large portion of this, he pointed out, is now being wasted. He went on to state that in the same way logged-over land can be made to produce several crops of small trees suitable for pulp making while the new crop of saw timber is developing and at the same time the new timber crop will be all the better for the thinning. Trees which are particularly suited to this type of harvesting are alders, cottonwood, and other shade trees, he stated.

A number of other talks relative to forest conservation were included in this program.

Announcement was made recently that Willard P. Hawley, vice-president and general manager of the Hawley Pulp and Paper company of Oregon City, Ore., has been made executive vice-president of the company and that W. A. Kelly of Green Bay, Wis., succeeds Mr. Hawley as vice-president and general manager. The latter will begin his duties on December 1. The president of the company is Willard P. Hawley, Sr., who is in Europe at the present time but is expected home for the Christmas holidays.

St. Helens Bag Factory Under Way

Construction was started late in October on a $150,000 building which will house the paper bag factory to be operated in conjunction with the St. Helens Pulp and Paper Co. at St. Helens, Ore. A. Guthrie and Company who erected the main plant, two years ago, have the contract for the new building which will measure 318 x 215 feet and will be of reinforced concrete and steel. It will be located on the west side of the present plant building. According to a recent statement, the building will be completed in 90 days from the time that it was started.

W. P. Hawley, Sr., is president of the St. Helens Pulp and Paper Co. which is a $2,500,000 concern. He makes his home in Oregon City where are located the mills of the Hawley Pulp and Paper Co. of which he is also president. Max Oberdorfer is general manager of the St. Helens Pulp and Paper Company and G. E. Emigh is superintendent of the paper mill.

Pacific Northwest Paper Mills Expanding

A national advertising campaign is being planned by the Pacific Northwest Paper Mills Inc., of Portland, Ore. to feature their patented product, a wrapping paper known as Ad-Wrap. They expect to advertise through nationally distributed trade publications that go to retailers that sell packages that are carried out of the store by the customer, it is stated.

At the present time work is being carried on to construct an addition to the plant which will double the present output. About 20,000 square feet of floor space will be available as the result of the increase, 7000 square feet being put into the new addition. It is expected that the work will be completed early in November. The structure is of reinforced concrete and brick. Associated with the Pacific Northwest Paper mills are the Commercial Papers, Ltd. of Toronto and the Middle States Paper Mills of Chicago.

First booklet of its kind
. . . ever published
for paper mills!

HERE is an illustrated, 12-page brochure that should be on the desk of every executive in paper mills, because it tells why and how Oakite is saving money for mill owners everywhere. Everything in this new and unusual booklet is based on our long and successful application of Oakite materials and methods to paper mill cleaning and related problems.

There are many uses for Oakite in paper mills. Write today for a copy of this new booklet. Apply the practical formulas it contains. And let our Service Man help you. Because in this way you can obtain all the economies and advantages which other mills have been securing for years through the use of Oakite.

The booklet is sent free to all who request it. There is no obligation involved whatsoever. Simply drop us a line and your copy will come to you by return mail, postage prepaid.

Manufactured only by

OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal. *Omaha, Neb., Oshkosh, Wis., *Philadelphia, Phoenix, Ariz., *Pittsburgh, Pleasantville, N. Y., Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Waterbury, Conn., Wichita, Kan., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE

TRADE MARK REG U.S PAT. OFF.

Industrial Cleaning Materials and Methods

In the year Lincoln was nominated for the senate.

In 1858 the Republican Party of Illinois nominated Abraham Lincoln as its candidate for the United States Senate. Lincoln lost the election but won for himself the nomination—and election—as President of the United States, two years later.

It was in the earlier of these years that two foresighted young men began the making of paper-making felts in Hamilton, Ohio, for the use of the growing industry in the Miami Valley.

The descendants of these two men are still running the business, still making the better kind of paper-making felts that built the reputation of their grandfathers 70 years ago.

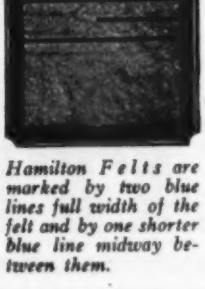
Naturally with these three generations of experience, Hamilton Felts are better felts, as you will see the first time you try one.

With Hamilton Felts on your machines you make paper at a lower cost. You remove more water and save in steam and coal. You get longer life and put up with less down time for washing.

You produce a better and more uniform sheet with less broke. In other words, a Hamilton Felt makes money for you.

Try a single Hamilton Felt. Put it to any test you think a felt ought to undergo. Compare it with the results you have been getting. Then, you will use Hamilton Felts on all your machines.

The Hamilton Felt man who calls on you can give you a Hamilton Felt which will fit your machines, stocks and mill conditions perfectly. Ask him or write to us direct.



Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Shuler & Benninghofen, Hamilton, Ohio

The Miami Woolen Mills

ESTABLISHED 1858

Hamilton Felts

President of the Pacific Northwest Paper mills is D. D. Madden; vice-president, Color Campbell; secretary, L. R. Welles and treasurer, I. C. Ulrich.

Homer Malcolm, formerly night shift superintendent, is taking the place of R. A. Sipes who recently resigned as sulphite superintendent of the Hawley Pulp and Paper Company at Oregon City.

Articles of incorporation were recently filed in Oregon by the West Coast Paper Products Company with capital listed at $25,000. This concern, which has for its incorporatars W. E. Stoppenbach, Sanderson Reed and Arthur M. Mock, 305 Wilcox Bldg., Portland, will engage in the manufacture and selling of paper, cardboard and similar products.

A paper product suitable for walls, floors and covering cement, is being put out by the Western Waxed Paper Co., Portland, for the first time. It is a kraft sulphate paper made by the Crown-Willamette Paper mills and processed by the Western Waxed Paper Co. with mineral oils and wax in order to render it air proof, non-adhesive and waterproof.

CALIFORNIA

Lewis L. Leadbetter

Lewis L. Leadbetter, 52, manager of the California-Oregon Paper company, died Sunday, October 21, at a hospital in Santa Barbara, Calif., following an operation. He had been ill for some time previous to his death.

Mr. Leadbetter was a brother of Fred W. Leadbetter, prominent in the pulp and paper manufacturing industry and president of the California-Oregon Paper Co.

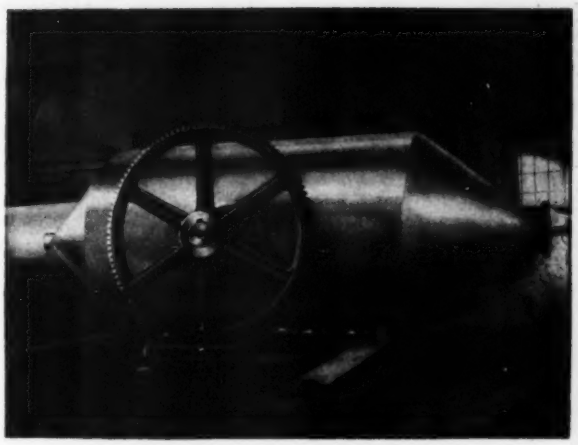
Wall Paper

The wall paper industry has for several years been the victim of a change in style, but it is now showing signs of recovery which are encouraging. Substitutes for wall paper made deep inroads in the business and when we compare 1925, a good general business year, with 1921, a year of business depression, we find that in 1925 the industry made 30 million dollars worth of paper as against 29 millions in 1921; an increase of only a million dollars in five years. Comparing 1925 with 1924, we find that the value of wall paper in 1925 was four million dollars less than the value of wall paper manufactured in 1924, a rather poor record for the industry.

The Wall Paper Manufacturers Association has taken two important steps in an attempt to stabilize their industry and improve conditions in general; the first, an advertising campaign to create a consumer demand, and the second, an exchange of statistical data to make available for the first time the current trends in their industry. The American Paper and Pulp Association was requested to develop a monthly statistical service for the wall paper manufacturers and on October 8, the first statistical statement was distributed to the members of the industry. This service includes data on production, shipments, value of shipments, orders and inventory. This service will be made more comprehensive by the statistical department of the American Paper and Pulp Association as soon as the wall paper industry becomes more accustomed to the use of the data now being distributed.

The smaller groups of the paper industry are finding that the exchange of statistical data is of as great value to them as that exchange of data is to the larger groups and the American Paper and Pulp Association is striving to encourage the exchange of statistical data to the fullest possible extent because no industry can ever know too much about its operations.

The Hammermill Paper Co., Erie, Pa., has announced the the appointment of Southwestern Mill Distributors, El Paso, Texas, as a Hammermill agent replacing the E. C. Palmer & Co. Ltd. branch recently discontinued.



Kellogg Digesters
in the South

THE Calcasieu-Sulphate Paper Company of Elizabeth, La., have insalled two Kellogg Forge and Hammer Lap Welded Tumbling Digesters, one of which is pictured above.

These digesters were built exactly in accordance with and are good for working pressure of 140 lbs. per sq. in. They are 10'0" I.D. x 28'6" long, and have a shell thickness of ⅛". They are complete with drive, reduction gear, and motor.

Among other Kellogg installations in the South are the following:

Bogalusa Pulp & Paper Co.	8	Digesters
Brown Paper Mill Co.	7	"
Calcasieu-Sulphate Paper Co.	2	"
Champion Fibre Co.	5	"
E-Z Opener Bag Co.	2	"
Southern Paper Co.	8	"

All Kellogg Digesters conform to the specifications of the Unfired Pressure Vessel Section of the A. S. M. E. Boiler Construction code, and fulfill all insurance requirements.

THE M. W. KELLOGG CO., 7 DEY ST., NEW YORK

Birmingham, Alabama—827 Brown-Marx Bldg.

Boston—12 Pearl Street *Pittsburgh*—Oliver Building

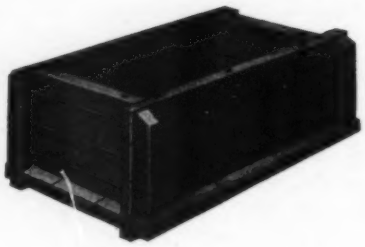
Chicago—53 W. Jackson Blvd. *San Francisco*—2929 Harrison St.

KELLOGG

POWER PLANT PIPING—FORGE WELDED PIPE—FORGE WELDED CONTAINERS—RECEIVERS SEPARATORS

ALL KELLOGG FORGE AND HAMMER WELDED PRODUCTS ARE INSURABLE

STEARNS TANKS



In addition to our regular line of box tanks we are fully equipped to build any type of wood tank. Every Stearns Tank is made in our own modern tank factory under the direction of our engineering department.

Submit your tank problem to us.

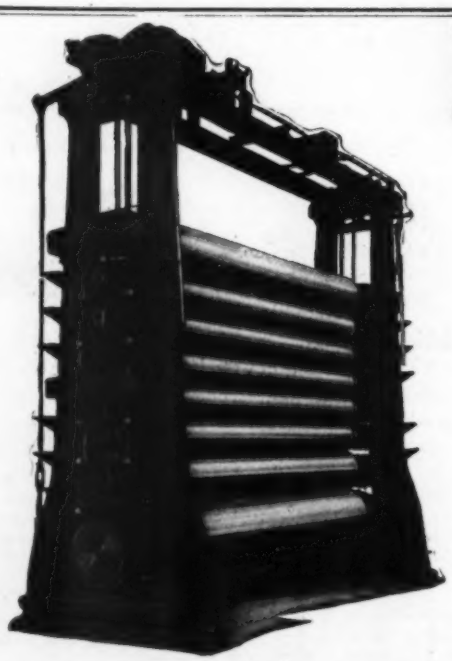
The A. T. Stearns Lumber Co.

Neponset, Boston, Mass.

EVERYTHING IN WOOD OR WOODWORK 1849

STEARNS TANKS

LOBDELL



CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

NEW ENGLAND NEWS

Activity and Expansion in the Industry

Important undertakings are heard on all sides in New England despite the prophets of despair whose chief topic is the decline of New England industry. In this section notable strides are being taken.

An apparently reliable report states that the International Paper Co. contemplates the early reopening of its mill at Van Buren, Me., and it is understood that a 250 by 1000 foot extension permitting two machines will be added to the plant which already contains a sulphate pulp mill. A mill across the river in New Brunswick to make the pulp which will be pumped over the river as at the Madawaska plant of the Fraser Companies is among the possibilities. Power for both plants would be generated at the Grand Falls development of the International Paper Co., which also will furnish power to the Fraser Companies.

It is reported that a special meeting of stockholders of the B. D. Rising Paper Co., Housatonic, Mass., November 2, accepted the purchase offer of the Strathmore Paper Co., Mittineague, Mass. It is understood the Rising plant will be operated as a separate unit and under much the same immediate supervision as at present. The plant has a daily production of 15 tons of high grade bonds and ledgers, from two 94 inch fourdriniers, trimming 78 inches.

The Strathmore Paper Co. has contracted for the construction of a four story addition and extension to its mill at Mittineague, which with new equipment is to cost approximately $75,000. The new structure will be 45 by 200 feet.

Ross Engineering Corp. is installing one of its systems at the Great Northern Paper Co. plant in Millinocket.

New Dilts beaters are to be installed at Bird & Son's mill, Phillipsdale, R. I.

It is also understood that the Whiting Paper Co., Holyoke, will install additional fourdrinier machines in its No. 3 mill.

A new digester is about to be contracted for by the Penobscot Chemical Fibre Co. This company is also completing the installation of new screens in its pulp mills at Great Works, Me., according to an announcement at the Boston offices of the company. The new equipment while it will increase the production 200 to 300 tons monthly, was designed primarily to insure uniformity of product by meeting the seasonal variations in conditions of the pulpwood, through longer cooks for wet wood, etc. The new equipment will give a monthly output of about 4200 to 4300 tons of air dry pulp, about equally divided between bleached sulphite and No. 1 soda pulp.

Freight Rate Hearing Postponed

The coal freight rate hearing in which the Boston & Maine R. R. proposed a new mileage scale and which raised a storm of protest involving suspension of the rates by all New England carriers on order of the I.C.C. has been postponed a second time from November 1st to November 13.

The New England Paper & Pulp Traffic Association has the most comprehensive case against the proposed scale. The association combats the new scale but also attacks the existing rates and demands an entirely lower basis. Important testimony by witnesses for Portsmouth, N. H. divulged the fact that large pulp importing interests contemplated utilizing the New Hampshire city as a port of entry for large quantities of Scandinavian pulp if the Concord branch of the B. & M. was not to be abandoned, a result feared in case the new coal rates drove away the present substantial coal traffic through that port.

An advance in the rate on chemical pulp from points east of Brunswick, Me., to points in New York State has been scheduled to become effective by the Maine Central R. R.

SODIUM ALUMINATE

For Highly colored waters, especially those requiring addition of alkali, Sodium Aluminate is decidedly economical. Coagulation usually takes place at a higher alkalinity, resulting in less free carbonic acid. A smaller amount of sulphate is added to the water, resulting in lessened mineral content.

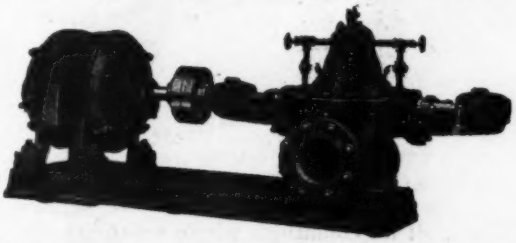
We shall be glad to investigate the applicability of Sodium Aluminate to your water supply.

MC

MERRIMAC CHEMICAL COMPANY
BOSTON

LAWRENCE "VORTEX" CENTRIFUGAL PUMPS

Built for Every Need in the Paper Industry



LAWRENCE "VORTEX" type S.S. Single Stage, Double Suction, Horizontal Split Casing, Enclosed impeller Pumps

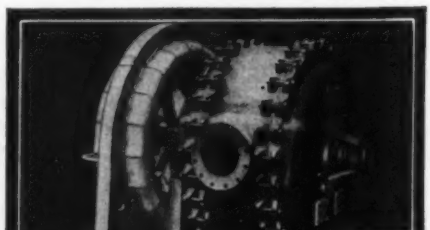
Designed for maximum efficiency against moderate and high heads, and for operating at high speeds. Standard pumps are bronze fitted throughout. Internal hydraulic balancing device which automatically eliminates all end thrust. Oversize Ball Bearings mounted in dust and grease tight housings.

They are built for continuous service. Year in—year out.

Our Engineers are always ready to help you with pumping problems. Write for Bulletins.

Lawrence Pump & Engine Co.
P. O. BOX 70,
LAWRENCE, MASS.
New York Office:—90 West Street

Direct drive saves floor space



Nash Hytor Vacuum Pump. For flat boxes, wires, felts and suction rolls. Capacities up to and exceeding 5,000 cu. ft. per min.

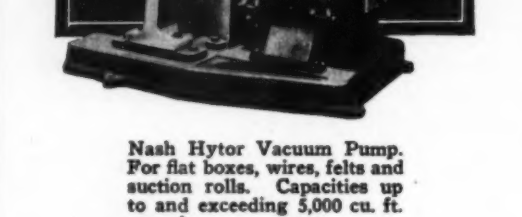
NASH Hytor Vacuum Pumps are direct-connected to synchronous motors. The pump impeller and motor rotor are mounted on the same shaft.

Direct drive is compact. It makes possible a considerable saving in floor space. Moreover, transmission losses between motor and pump are eliminated. So, also, gears—belts—chains and the maintenance costs which such types of drive involve. Dependable operation is assured.

A compact, efficient, simplified arrangement.

NASH ENGINEERING COMPANY
161 Wilson Road South Norwalk, Conn.

Nash Hytor
VACUUM PUMPS AND COMPRESSORS



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

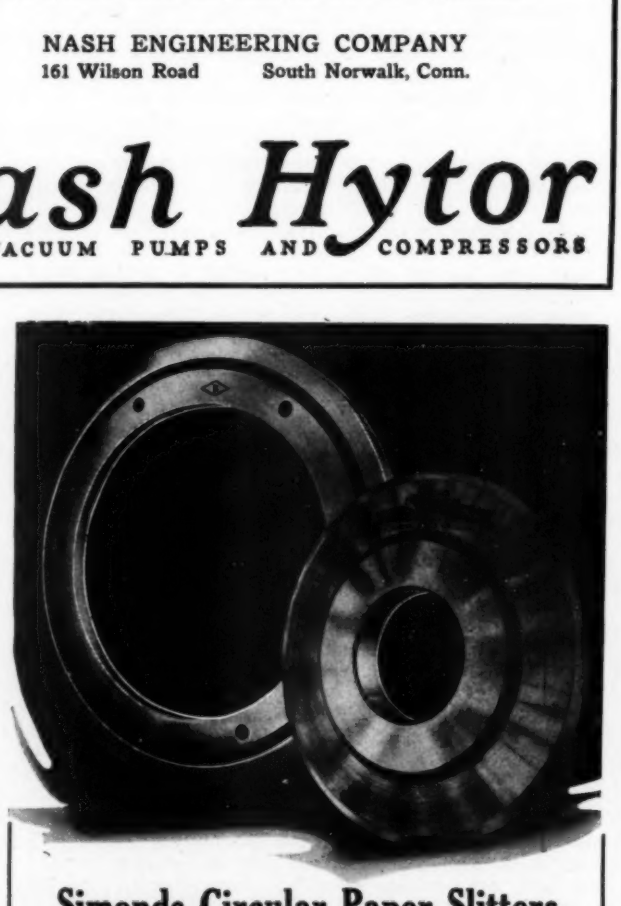
Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery



Simonds Circular Paper Slitters

Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company
ESTABLISHED 1832—FITCHBURG, MASS.

Chicago, Ill. Boston, Mass. Detroit, Mich. New York City
New Orleans, La. Memphis, Tenn. Atlanta, Ga. Portland, Ore.
San Francisco, Cal. Los Angeles, Cal. Seattle, Wash. Montreal, Que.
Toronto, Ont. Vancouver, B. C. St. John, N. B.

The new rate will be 30.50c from Great Works, Me. On protest of shippers a hearing before the New England Freight Association was held at Boston during the past month. Protest was taken under advisement, but was believed to have been fruitless insofar as stopping increased tariff is concerned. Shippers contend that imported pulp moves on lower rates for similar mileages than domestic pulp.

First Standardization Bureau Meeting

Much credit for the return in the eyes of the public of the rag paper to a position of prominence in the paper industry can be ascribed to the publications and ceaseless efforts of the mills banded together for this purpose. No single factor, however, has helped more than the Paper Users Standardization Bureau, in the deliberate estimation of paper merchants, including some who are not Eagle A service houses. The first of 22 regional conferences of this striking organization was held in Boston on Tuesday, October 30, and attended by some 75 persons including many purchasing agents for large corporations. The meeting was addressed by Miss Helen U. Kiely, scientific director of the A.W.P. Co., and the Bureau director, Robert C. Fay. Miss Kiely undertook to inform the gathering of the problems confronted by the paper maker in producing paper for varying purposes. Her detailed description of testing devices stressing the importance of the folding tester as a near absolute check on the permanence of rag content paper, her clear explanation of the necessary qualities for different papers was greatly appreciated. Mr. Fay took up the specific work of the Bureau and solicited requests for its service.

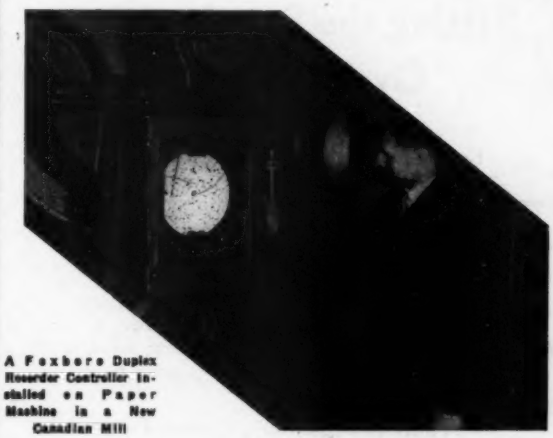
Among the salient points in Miss Kiely's address was the fact that the best wood derived pulp on the market was but 92 per cent cellulose, that shirt cuttings the ideal base for permanent paper must be contrasted with thirds and blues and colored new cuttings in considering the term "100 per cent rag paper", in other words, that rag content was not in itself of value without a fold test check to determine the quality of rag content; that five years must be considered the safe limit for the life of all wood papers.

Mr. Fay after discussing the many savings that had been made to the 300 or more corporations whose forms had been analyzed by the Bureau offered the Automatic Standardization File by which small firms or companies with few forms could classify their papers according to the life desired and check on the grades of paper used. The company has prepared a series of charts printed in attractive booklets which indicate the savings incurred by a group of corporations after standardization as well as the reduction in number of lines purchased. Those present were guests of the Boston service houses and the Bureau, at the luncheon at the Hotel Statler. The second meeting of the Bureau was held on November 1st at Hartford.

The firm of M. Rudolph Jahr, Inc., has been chartered under Massachusetts laws, 250 shares no par capital stock, for the purpose of manufacturing, importing and distributing of paper machinery and other types of machinery. The business is to be carried on at North Andover, Mass. The president and treasurer is Fritz Osthen.

The Flintkote Co. stockholders at a meeting held in Boston the first of November approved the offer of the Royal Dutch Shell Co., for purchase of its business. Approval was given to the contract for the purchase of the Beekman-Dawson Roofing Co., of Chicago.

The Fitchburg Paper Co., Fitchburg, Mass., after investigation has added the Craig system of combustion control to its boiler plant completed last year. This renders complete automatic control and has been in successful operation since last summer. It regulates the feeding of the coal to the pulverizer, and every step in the process thence to the



A Foxboro Duplex Recorder Controller Installed on Paper Machine in a New Canadian Mill

Better Dried Paper at a Lower Cost

PUT Foxboro Duplex Recorder Controllers on your dryers and you can make paper at exactly the moisture content you want.

You know what temperature your particular type of paper demands. Just set the Foxboro Controller at that temperature and it will be maintained with no time lost. There's no chance for overdrying or underdrying because the Controller corrects each temperature variation the instant it occurs.

The instrument earns its cost in the steam it saves. It operates both exhaust and live steam valves, allowing live steam to be used only when necessary. There is no waste.

The Foxboro Recorder Controller records as it controls, accurately and instantaneously. You get continuous records of the drying operation.

Each Foxboro Instrument is sealed with a guarantee of permanent calibration. This is your protection. We suggest that you write at once to the nearest Foxboro Branch Office for more information on how Foxboro Control can increase production and lower production costs.

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U.S.A.

NEW YORK · CHICAGO · BOSTON · PHILADELPHIA · DETROIT
PITTSBURGH · CLEVELAND · ROCHESTER, N. Y. · ATLANTA
PORTLAND, ORE. · TULSA · LOS ANGELES · SAN FRANCISCO
DALLAS

FOXBORO

REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

INSTRUMENTS FOR CONTROLLING, RECORDING AND INDICATING TEMPERATURE, FLOW, HUMIDITY AND PRESSURE

Setting the Standard for Over 80 Years

For over 80 years Fitchburg has been setting the standard for dryer felts. Over 80 years' experience has shown how to get that smooth, tightly woven surface that leaves no felt marks in the paper. It has shown us how to weave a strong, durable cotton duck felt that will last longer and with less down time for a broken felt. Paper makers who once use Fitchburg felts never use anything else.

There is a Fitchburg Cotton Dryer Felt for every paper—for fine ledger or bond, book or coarse papers. They are manufactured in English weave in two, three, four, five and six ply, from 60 to 288 inches in width.

When next thinking of dryer felts, think of "Fitchburg".

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

Cleanliness

Belting should be cleaned every so often. Its porous nature absorbs moisture which includes many fine particles of dirt and dust.

After the belting has been cleaned a small application of a good belt dressing should be used. STEPHENSON BAR BELT DRESSING, Red Label for Leather and Green Label for Rubber and Canvas belting has been on the market now for over forty years. We will be glad to send you a sample of either or both brands on request.

Stephenson Manufacturing Co.
Albany, N. Y.

REPUTATION
SERVICE
QUALITY

Are the Three PRINCIPAL Factors Which Have Placed

LOCKPORT TENAX FELTS

IN THE LEAD IN THE FELT INDUSTRY OF THE WORLD

We could comment about technical manufacturing operations, stating WHY—LOCKPORT TENAX FELTS excel all others, but, without a practical demonstration it would not mean a thing to the PAPERMAKER. Results—Count.

LOCKPORT TENAX FELTS DO EXCEL.

REPUTATION—*Built up on 37 years fair dealings*
SERVICE—*Which means attention in every detail*
QUALITY—*Which cannot be equaled in any respect*

LOCKPORT FELT CO.
NEWFANE, NEW YORK

delivery of the combustible fuel to the furnace. Since its installation there has been a further reduction of 50 per cent in the labor required in the boiler room.

Defendants File Answer to Barrett Suit

The Robert Gair Co., Bird & Son Inc., and Chemical Paper Mfg. Co., have filed an answer to the suit of W. F. Barrett in the Federal Court at Boston. The latter as plaintiff alleges restraint of trade in various forms, particularly directed at himself and asks for damages of $100,000.

The mills specifically deny his allegations, but content themselves with pointing out that the same plaintiff brought exactly the same charges in the Massachusetts State Courts, that the Superior Court of Salem, Mass., after receiving a Master's report dismissed the case, and that no new issues are raised.

The plaintiff was formerly a waste paper dealer at Haverhill, Mass., and has always alleged that his sale of waste paper was interfered with by agreement among the mills. The Paper Board Industries Association is also a defendant in the case.

The proposed changes in the capital stock of the American Writing Paper Co. have been outlined to stockholders by president S. L. Willson. A vote on these changes by holders of voting trust certificates will take place on November 30. The plan embraces replacement of present 7 per cent cumulative preferred stock with a new preferred issue consisting of 90,000 shares of no par entitled to a $6 dividend but cumulative only as to $3 per share during 1929, $4 during 1930, $5 during 1931 and $6 on and after January 1, 1932. The new shares would be callable at $105 per share. No par common would be increased from 150,000 to 200,000 shares, holders of present voting trust certificates for preferred receiving certificates for one share new preferred and one half share new common for each one share now held. Profits for July, August and September amounted to a net of $78,578 and should be around $55,000 for the remainder of the year based on the last year results.

Unique Paper Exhibit

Four companies exhibited their paper products at the annual exhibit of Massachusetts manufacturers which ranged from Rolls Royce automobiles to safety razor blades, at the Copley Plaza Hotel exhibition hall and salon under the auspices of the Associated Industries of Massachusetts.

Tileston & Hollingsworth & Co., had two booths, one of which was graced by attractive young ladies in the crinoline of colonial times, representing the "Experience of Age". Another exhibit of T. & H. papers, notably the newest, Crinoline Super Plate, an uncoated, plate paper for color and half tone work, representing the "Aggressiveness of Youth". Crane & Co., and Eaton Crane & Pike had a most interesting exhibit of paper making illustrated in minature by an E. D. Jones beater in actual operation of beating rag stock, a rag bleach boiler, bales of new shirt cuttings, pole dryers and other equipment. In addition there were handsome papetries of Eaton Crane & Pike. George W. Wheelwright Paper Co., had an attractively arranged booth with samples of printing craftmanship on Best Plate Finish and Dove Mill Bristols. American Writing Paper Co. had a large representation in paper of a prize ring with "Price" being counted out by "Quality," all made from Eagle A papers.

J. H. Horne

Few men in the mill machinery trade had such a wide circle of warm friends among the paper trade as John Ellis Horne of Lawrence, Mass., who died at his home in that city recently. Born in 1865 in Medfield, Mass., he was taken into the firm as a partner by his father in 1882. He was treasurer at his death, a post he had held since 1888. His surviving brother, Byron Horne, is president. He was also president of the Holyoke Bar Co., and a director in the

Felt Cleanliness

THE **Cleanliness** of your **Felts** is an important part of your paper making. Dirty felts give you trouble and greatly increase your cost by necessitating frequent shut-downs for felt changes and washing.

A **Felt Washer** which will clean the felt while it is running will greatly increase the efficiency of your plant. The Lansing Felt Washer will do that.

The **Felt** will be **kept soft.**

The **Life** of the **Felt** will be **Increased.**

The **Quality** of the **Sheet** will be **improved.**

Greater Production will result as the necessity of shutting down for felt washing will be practically eliminated.

The washing is done in nature's own way, with plain water.

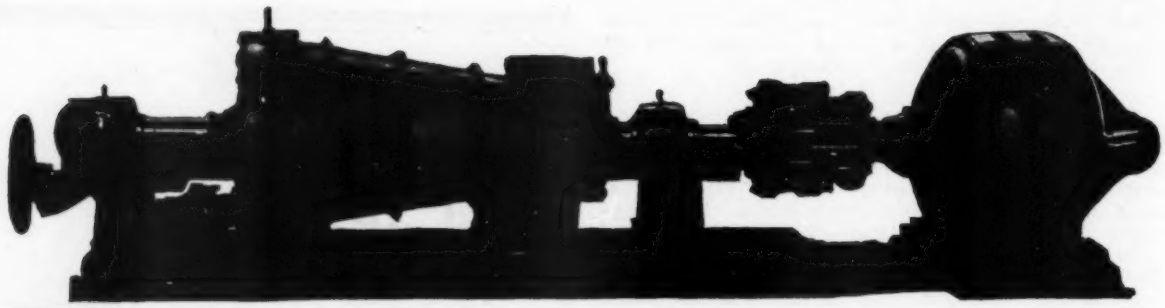
Representative mills all over the country are now using this washer with satisfactory results.

May we tell you more about it?

GILBERT J. SCOFIELD COMPANY, INC.

683 Broadway

ALBANY, N. Y.



THE No. 2 EMERSON JORDAN

is equipped with

TIMKEN ROLLER BEARINGS

A New Epoch in the paper making industry

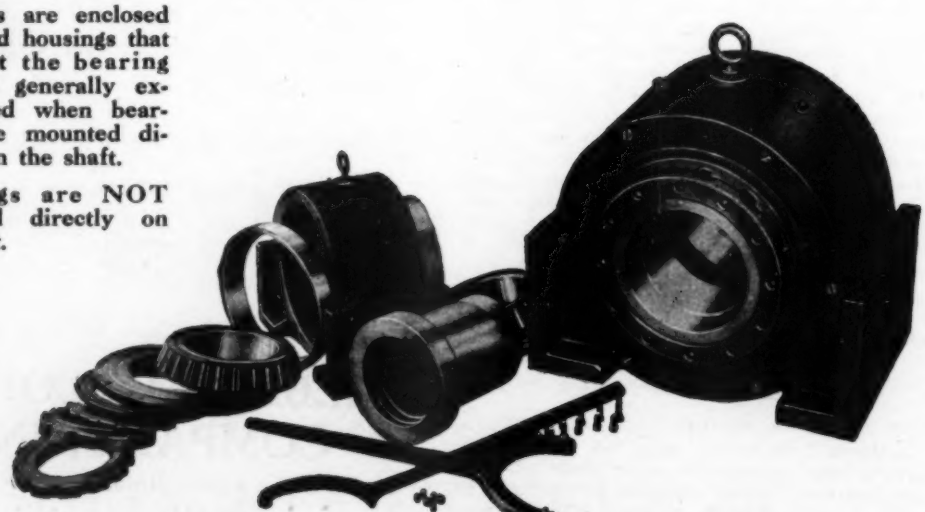
The No. 2 Emerson Jordan, shown above, is a masterpiece of refining equipment, having Timken Roller Bearings and Bandless Plug. This sturdy, well constructed bearing application is just another characteristic of Emerson Quality and progressive engineering.

Features to Consider.

(1) Timken Roller Bearings, both radial and thrust, are mounted on taper-bored sleeves.

(2) Bearings are enclosed in sealed housings that prevent the bearing troubles generally experienced when bearings are mounted directly on the shaft.

(3) Bearings are NOT mounted directly on the shaft.



THE EMERSON MANUFACTURING CO. Lawrence, Mass.

Merchants Trust Co., and the Broadway Savings Bank of Lawrence. In very recent years active management has been delegated to others in the organization, but Mr. Horne continued to keep in close touch with affairs. He was a prominent Scottish Rite Mason and held memberships in various Masonic orders. Funeral services were Masonic and held at West Andover, Mass., October 15th. He is survived by his brother Byron, a son H. Franklin Horne and two daughters.

WISCONSIN NEWS

Little Activity Among the Mills

Paper mill activities in Wisconsin have assumed a rather quiet status this fall. Aside from the announcement of a new factory to be built by the Wisconsin Carton Company at Neenah, Wis., there has not been much of the expansion which characterized the spring and summer season. Several large building projects are being brought to completion, and the result will be some changes in lines of production, and some increases in output.

The Wisconsin Carton Co. is a new concern headed by J. T. Mader, formerly with the Menasha Products Co. Organization work has been under way for some time and more than half of the authorized capital stock of $200,000 has been subscribed.

With funds thus raised, the company will build a factory at West Menasha, Wis., where at one time the Valley Paper Mills intended to erect a paper mill. The Valley company was a wartime venture which failed to materialize.

Stockholders of the Wisconsin Carton Co. have elected the following board of directors: J. T. Mader, Neenah, Wis.; B. C. Koepke, contractor, Appleton, Wis.; J. T. Thompson, Davis-Thompson, Machine Co., Milwaukee; Gust Ladwig, building contractor, Milwaukee; W. M. Otto, superintendent of the Nancy Box plant, Watertown, Wis.; W. E. Kingsbury, of Stevens Point, Wis., and Henry Fellenz, secretary-treasurer of the Theresa and Rock River Canning Co., Theresa, Wis. Mr. Mader is manager and William F. Wolf is fiscal agent. Officers are to be elected later.

Plant Improvements Under Way

Arrival of wintry weather will find the new bleach plant and the new finishing room of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, under roof. Steel work is all in place and crews have been busy concreting and bricking in the side walls preparatory to putting on the roofs.

Most of the exterior construction is completed on the new digester plant of the Consolidated's subsidiary at Appleton, the Interlake Pulp and Paper Company. Progress has even come to the point where crews are going through daily training in the operation of the new digesters so there will be no curtailment of production when the transfer is being made from the old plant to the new.

After thirty-five years of operation the old plant had become obsolete. The new one has nine digesters which will be used for Mitscherlich sulphite pulp. They are of one and one-eighth inch flange steel plates, have an inside diameter of fourteen feet, an are forty feet long. Indirect heating will be furnished to each digester by 700 feet of copper tubing. Close cooking control will be possibly by the convenient location of steam valves, relief and blow off valve controls, hydraulic operated cover hoists, steam traps and recording instruments. These all will be located at the operating end of each digester.

Each chip bin will have a capacity of sixty cords, and the stock pits will hold twenty-eight tons, or enough for two cooks. Save-alls will be attached to the drainer bottoms to prevent stock loss. Water for the Mitscherlich cooling system will be furnished at either high or low pressure by a double centrifugal pump operating either parallel or tandem.

Draining of the blow pits and stock sluice ways will be

NOW or NEVER!

TO earn its maximum profit, a Fourdrinier machine must turn out its quota of paper each hour.

Idleness means lost production and runs up the overhead on your investments in machines and equipment.

You can keep your machines going —assure maximum production— avoid delays due to wire repairs and replacements—by using Tyler Fourdrinier Wires on your machines.

Tyler Fourdrinier Wires are woven accurately and dependably from a special composition, specially-treated wire.

They greatly reduce the chance of breaks and tears and cut down the time wasted for wire repairs.

Supplied in all widths up to and including 234 inches

The W. S. TYLER COMPANY
Cleveland, O.

TYLER WIRES

Backing Wire Tyler Fourdrinier Wire Corduroy Cloth

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE CORPORATION. BELLEVILLE N.J. U.S.A.

BOLTON QUALITY

JOHN W. BOL TON & SONS, INC.

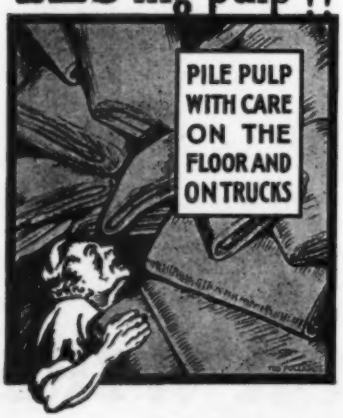
EAGLE KNIFE & BAR WORKS

LAWRENCE, MASS.

The only firm making KNIVES for every machine from wood pile to finishing room.

It's the KNIVES that do the work!

YES he's knocked out by falling pulp !!



National Safety Council
168 East Ohio Street,
Chicago, Illinois.

Please send me without obligation, information on how I can reduce accidents in my organization.

Company .....

Street .....

State .....

Your Name .....

You, too, can reduce *Your* ACCIDENTS

OVER 4,300 American companies have reduced their accidents even as much as 90 percent through the services of the National Safety Council—the only non-profit national accident prevention organization for industry. This accident prevention service, developed by foremost safety engineers, is complete. It has saved Council members millions of dollars. At a low price, you too can get the assistance in Safety work that your company needs.

You, as a member of the National Safety Council, will receive each month a selection of forty two-color accident prevention posters—strikingly illustrated. This is a definitely planned program to educate your workmen in Safe Practices—to reduce your accident costs. A sample poster in miniature is shown at left.

The National Safety News, an eighty-page magazine, will be sent to you each month. You will find its articles practical—inspiring—of real service.

In addition, you will be privileged to call upon the Council's staff of trained Safety engineers, editors, and librarians for information and advice on your accident prevention problems. At your disposal is the Council Library—the most comprehensive collection of safety knowledge in existence.

Investigate the services of the National Safety Council—only partly covered in the foregoing paragraphs. Kimberly Clark, Long Bell Lumber Company, and hundreds of other small and large companies use it profitably. Why not you? Return the coupon for full information.

controlled by hydraulic valves operated from the main floor. Copper piping will be used everywhere to prevent slime and dirty water.

Convenient access to all floors will be had by a large electric elevator. The plant also will be equipped with a bucket belt elevator ninety feet high to be used for conveying chips to a thirty inch belt for distribution to all the digesters.

Improvements also have been made by the Consolidated Water Power and Paper Company at the main mill at Wisconsin Rapids. Beloit suction rolls and fourdriniers with Beloit high speedshakes have been placed on machines 1 and 2. The fourdriniers have roller bearing breast and tube rolls. Wires have been widened from 65 to 85 feet and smoothing rolls have been added. No. 1 machine now produces a sheet that trims 127 inches and No. 2 machine remains at the old width of 122½ inches. Two calender stacks and a drum reel have been placed on the latter, however.

New thrash racks have been placed in front of the grinder wheels and rack bars used for the last twenty-five years have been replaced with new steel ones.

Industrial Education

These are school days in the paper industry. Never before in history have so many employees been enrolled in classes of some kind for the advancement of their work. For the first time this season, the educational work has been statewide in all its phases, largely due to the appointment of H. G. Noyes last season as full time state director of paper mill education.

Safety classes are receiving widespread support everywhere. One of the striking examples is the safety school conducted for the first time this fall at Menasha, Wis. The school is sponsored almost entirely by paper and allied industries of Menasha and Neenah, Wis., and on the opening night there were 425 present. The speaker was L. Sagemueller, manager of the Meteor Oil Co., Milwaukee, Wis. In his address on "Safety and Responsibility" he laid stress on the power of foremen to prevent accidents.

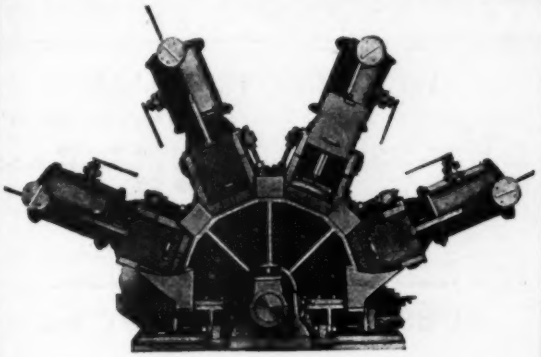
At the second meeting a significant address was made by R. G. Knutson, of the Wisconsin Industrial Commission. He said there was a reduction of 1,400 in the total number of lost time accidents in 1927 as compared to the previous year, indicating that safety campaigns have paid. The number of lost time accidents last year was 26,000, costing employers and insurance carriers $4,750,000.

The Consolidated Water Power and Paper Co., Wisconsin Rapids, has arranged a foreman's training class in cooperation with the local vocational school and will hold twelve sessions. At Appleton the Riverside Fibre and Paper Co. and the Patten Paper Co., Ltd., are holding classes in pulp and paper making classes right at their plants, arranged so men on all shifts can participate. Evening courses dealing entirely with wires, another with felts, and a third with pumps, are in progress at Appleton Vocational School. At Kaukauna, Wis., classes will study beating, Fourdriniers, physical and chemical characteristics of paper, and paper finishing. The instructor is A. T. Gardner, of the Combined Locks Paper Co.

In order to help mills establish classes for foremen, M. W. Smith has prepared a booklet entitled "A Catechism on Foreman Training by the Conference Method." Mr. Smith conducts these classes in the Fox River Valley and issued this information for the benefit of executives.

The Wisconsin Industrial Commission has before it recommendations from a special committee of the paper industry under which it will be possible to enforce a Wisconsin law which requires rest for industrial employees each seventh day. Proposals were prepared at a conference at Wisconsin Rapids, Wis. They provide that the requirement be one day of rest in every calender week instead of one every consecutive seven days. Exemptions are requested for superintendents, department heads who do no manual labor, and employees whose duties include no more than three hours of essential work on Sunday, making necessary repairs to boilers, wiring and machinery. Walter L. Mead, of the Con-

"Repeat Orders Are the Best Indorsement"



International Grinders

Built with either three or four pockets—heavy construction throughout.

Pockets held in position by two large steel bolts—bridge trees extra heavy.

Pockets large in size, so that frequent refilling is unnecessary.

Save-alls below outside pockets catch all pulp when pockets are opened.

Special tapered bronze bushings—thread on inside only.

Bearings very large—wedge adjustable.

Equipped with Barker valves which are designed so that they stay tight.

GREEN BAY BARKER
Machine & Tool Works
Green Bay Wisconsin
"Machinery Manufacturers"

WE OFFER FOR SALE

Fourdrinier Paper Machines trimming 152", 138", 92", 80", 69" and 60". All excellent machines.
42" Cylinder Machine suitable for experimental machine.
Slitters and Rewinders: 72" Langston Type B, 60" Kidder Model S. H., 40" Kidder Model S. L., 50" Cameron.
One 41", two 60" and one 84" Hamblet Rotary Sheet Cutters; and one 65" Hamblet and one 90" Beloit Duplex Rotary Sheet Cutters.
Two No. 4 Nash Vacuum Pumps.
Variety of Jordans—Noble & Wood, Horne, Jones, etc.
Several Stacks of Super Calenders—40" up to 90".
Several Variable Speed Engines for Paper Machine Drive.

GIBBS-BROWER COMPANY, Inc.

Paper and Pulp Mill Brokers
261 Broadway, New York City
Telephone—Barclay 8020
OUR MOTTO—"Service First"

If taken immediately

$16,000.00

will buy a paper mill in excellent condition, and one which formerly carried a bond issue of

$100,000.00

Located in live manufacturing town with good railroad facilities. Terms—
$10,000.00 cash, balance on first mortgage

Maurice Lane, Sole owner
405 First Trust & Deposit Bldg.
Syracuse, New York

"For Better Service" use the HOLYOKE wire
Decreases Cost - Increases Production

HOLYOKE WIRE CLOTH CO.

Manufacturers of
Fine Fourdrinier Wires, Cylinder Covers and Dandy Rolls
Water Marks A Specialty
HOLYOKE MASSACHUSETTS

Wanted—at once an A1 experienced back tender for board mill, with excellent opportunity for advancement. Mill located in Northern Wisconsin. Address Box 146, The Paper Industry.

SUPERINTENDENT—20 years experience on Rag and Wood papers, wishes new connections with paper mill. Address Box 144, The Paper Industry.

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

Paper Mill Machinery

1—Rice Barton & Fales Fourdrinier with two presses 24 dryers 48x94", two calenders
1—Fourdrinier with two presses, 19 dryers, 36x84"
1— 84" Clark Cutter with Moore & White Layboy
2— 90" Holyoke Super Calenders motor drive
1— 72" Holyoke Super Calender motor drive
3— 66" Holyoke Super Calenders belt drive
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solidated Water Power and Paper Co., Wisconsin Rapids, was chairman of the committee. He was assisted by S. F. Shattuck, of the Kimberly-Clark Corp., Neenah, Wis., and Congressman George J. Schneider, representing the Wisconsin Federation of Labor.

Government Rebuilding Dam at DePere

A notable improvement on the Fox River, which serves so many paper mills with water power, is the rebuilding of the dam at DePere, Wis., one of the longest on the waterway. The engineering department of the United States Government has kept 40 men employed for the last five months tearing out the old sluiceways and replacing them with larger and more sturdy ones of concrete. The sluiceway section is 350 feet long, and requires fourteen new steel gates. The piers and gates are all in place and the work has been suspended for the winter. Control of the gates is provided by means of a portable electric motor.

When navigation opens up again in the spring the government will resume its work at this dam and will build new spillways of concrete at each side. The wooden "needle" dams will pass out of existence. Total cost of the improvements is $205,000.

Damage amounting to $5,000 was caused by a fire recently at the Nicolet Paper Co., of DePere, Wis. A cupola and part of the roof of the calender room were destroyed. Operations were suspended for about 24 hours, but production was not crippled seriously, since none of the machinery was affected. The loss included fifty rolls of glassine paper still in the calender room and ruined because of the volume of water it was necessary to use. The fire started early in the morning when a fan in one of the ventilators became overheated and ignited the framework. It swept quickly to a cupola but was checked there.

Inroads of forest fires on the Wisconsin pulpwood supply are being checked quite effectively through the establishment of eleven fire protection districts by the Wisconsin Conservation Commission. Each has a warden and a fire fighting crew. Trucks, twelve pumps, 12,000 feet of hose and 750 five gallon fire extinguishers for individual use constitute the bulk of the new equipment. Twenty-one lookout towers ranging in height from 62 to 86 feet have been placed at strategic locations to permit quick detection of fires. Telephone lines between districts make quick response and concerted action possible. Fire ranger stations have been located at White Lake, Conover, Hayward, Spooner and Tomah. An educational campaign consisting of warning signs placed frequently along highways has helped to prevent fires.

Some of the Wisconsin paper mills have been visited by Itsuki Nishi, manager of the Jujo mill of the Oji Paper Manufacturing Co., of Tokyo, Japan. He is endeavoring to learn whether American machinery can be adapted to papermaking in Japan. He inspected the plant of the Beloit Iron

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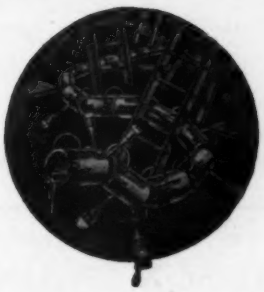

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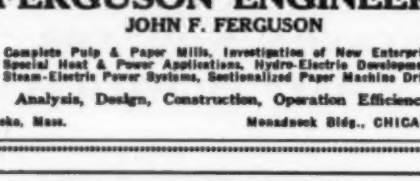

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Works and the mills of the Consolidated Water Power and Paper Co., of Wisconsin Rapids. He was accompanied by C. T. Ramsdon, of the Beloit company, and Takensuke Sugihara, of Mitsui and Co., New York.

An employment survey for August conducted by the Wisconsin Industrial Commission reveals that 1.2 per cent more persons were engaged in the industry than in August of the previous year. The month also showed average weekly earnings of $26.60 as compared with $24.45 in July, and $25.94 during August, 1927. The wage basis is 53 cents an hour and the average working period has been 48.3 hours a week. Labor turnover was 7.9 per cent as compared to 8.0 per cent a year ago.

Accumulations in the sinking fund of the Consolidated Water Power and Paper Co., Wisconsin Rapids, will be used to retire a block of 5½ per cent first mortgage bonds this month. Securities amounting to $30,000 have been called for redemption at a premium of three per cent.

After bringing 72,000 cords of pulp wood across Lake Superior in rafts, the Consolidated Water Power and Paper Company has discontinued this work for the season. Six rafts were taken across successfully by the company's tug Butterfield. The wood was conveyed to Ashland, Wis., from where it was sent to various mills of the organization.

A large tract of land between the Hemlock and Deer rivers in Michigan will be logged for pulpwood this winter by Judson G. Rosebush, the owner. Mr. Rosebush is president of the Patten Paper Co., Ltd., and the Northern Paper Mills, of Appleton, and Green Bay, Wis., respectively. He is having a railroad built over a route thirteen miles long from Amasa, Mich. to the timber tract.

The Paper Industry wishes to acknowledge an erroneous item which was published in this column of the October issue, stating that an employee of the Fox River Paper Company, Appleton, had been indicted for manslaughter following a horse play accident. This incident did not occur at the plant of the Fox River Paper Company, and the publication of such a misstatement is regretted.

Donald Eibel

Donald Eibel, the only son of Mr. and Mrs. Wm. Eibel, died October 10, 1928 at Rhinelander, Wis., from injuries sustained in an automobile accident. Donald was 23 years of age and had lived in Rhinelander practically all of his life. He was graduated from the Menominee, Mich. high school and had attended Leland Stanford University also the University of Southern California.

At the time of his death, he was employed by the Rhinelander Paper Co., and was preparing to accompany his father, who has just been elected secretary and treasurer of the Fir-Tex Insulating Board Co., Portland, Ore., to the Pacific Coast.

RHOADS TANNATE WATERSHED LEATHER BELTING

IN A MINNESOTA PAPER MILL

IN February, 1927, a 14-inch, 8-ply rubber belt with a 10-inch, 6-ply rider was replaced by a 16-inch, 2-ply Rhoads Tannate Watershed Leather Belt on a press drive of a Yankee Machine. The pair of rubber belts seldom lasted six months. The Tannate Belt is still good.

In November, 1927, *two more presses* were belted with with Tannate.

In April, 1927, Tannate Watershed Belts replaced rubber on two drum-dryers in this mill: In January *another dryer* was belted with Tannate.

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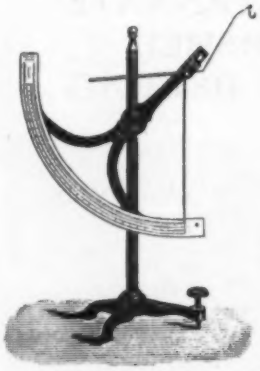

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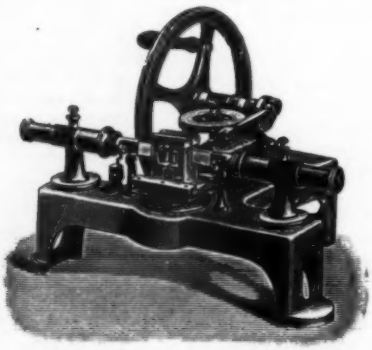

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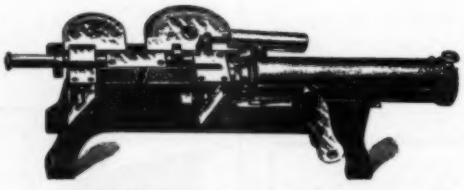

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Technical Developments in the Paper Industry

Domestic and Foreign

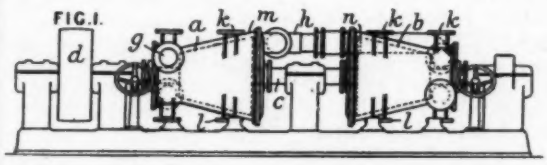
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Pentosans in the Sulphite Cooking Process

WHEN heated with sulphite cooking acid above a temperature of 60 degrees C., (aspen) pentosans form a compound with calcium hydrogen sulphite in which one molecule is attached to a pentosan molecule consisting of four pentosan remnants. At a temperature of 136 degrees C., the ratio is one molecule to two pentose remnants, and hence the basic pentosan unit is regarded as $(C_5H_8O_4)_2$. Above a temperature of 136 degrees C., disintegration of the molecules takes place with production of sulphuric acid or sulphate and carbon. On cooking with hydrogen sulphite the compounds resulting from the decomposition of the pentoses contain one molecule of sulphur dioxide for each reacting pentose molecule. The action of hydrogen sulphite differs from that of free sulphur dioxide. Replacement of calcium by magnesium results in less decomposition of pentosans. The unstable compound which is decomposed by ammonia, liberating calcium sulphite, results from interaction of the hydrogen sulphite with lignin or hexoses, but not with pentosans. L. P. Zherebov, Bumazhnaya Promuishlennost, volume 6, pages 387-404.

Pulp Refining Engines

IN A REFINING engine of the conical type, two or more refining elements (a) and (b) mounted on a common shaft (c) are connected in series in such a manner that



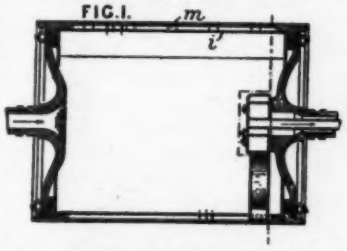
the stuff enters the small end of the element (a) at (g) and passes out through the larger end thereof through a pipe (h) to the smaller end of the next element (b). The two larger ends (m) and (n) may abut as shown, or the larger end of one element may abut the smaller end of the next element. Top and bottom flanges (k) and (1) are provided to facilitate the changing of the top of the casing to the bottom position in order to maintain even wear of the casing. British Patent No. 292,228.

Cellulose from Wood

THE yield of cellulose from cellolose containing material, such as pine wood and beech wood, is increased, and a stronger product is obtained by boiling with alkali just long enough to separate the fiber, then treating with chlorine whereby hydrochloric acid, and lignin chloride, are produced. Chlorine in the form of chloride of lime is then added, and the reaction carried on with continual stirring, then the stuff is washed first with water and afterwards with a little alkali. The bleaching is effected with a hypochlorite such as chloride of lime. The treatment with chlorine and hypochlorite preferably takes place in more than one stage, the first stage using less chlorine and hypochlorite than would correspond with the total lignin present. E. Hagglund, Abo. Finland. British Patent No. 292,534.

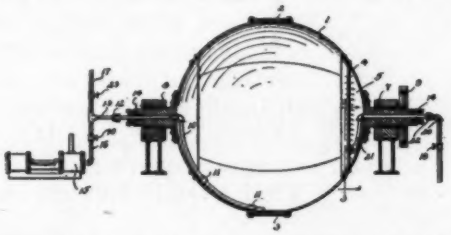
Drying Cylinders for Paper

IN DRYING cylinders, such as are used on papermaking machines, the inner surface of the cylinder is lined with a perforated sheet metal sleeve (i) held at a uniform short distance from the inner surface of the cylinder by blocks (m) or like spacers which may be secured to the drum or to the sleeve. The steam impinges on to the interior surface of the cylinder through the perforations as jets and more efficient heating is obtained resulting in a saving in the number of cylinders required or in allowing the rate of passage of the material through the driers to be increased. E. Luetschen, Munich, Germany. British Patent No. 293,647.



Washing Cooked Straw

THE method for treating straw for making strawboard or papers is first to rotate the same in a closed vessel, of the type shown in the accompanying illustration, with a lime sulphur solution in the presence of steam under pressure. Thereafter the rotation of the rotary is continued with a restricted outlet in this vessel. Water is applied against the



pressure of the steam held in the vessel, whereby water will flow through this vessel, reducing the pressure of the steam and removing from the vessel a portion of the solution. United States Patent No. 1,678,718. De W. C. Amerine, Vincennes, Ind.

Treating Sulphite Pulp

THE sulphite pulp waste liquors are treated so as to recover from them solids which are useful in the preparation of new liquor in digestion of sulphite pulp. These solids contain principally the sulphites which are insoluble in water. These sulphites are recovered from the waste liquor by treating it with an alkaline earth metal base in order to neutralize the acidity of the liquor. The amount of alkali used is sufficient to produce the degree of alkalinity which is expressed by the symbol pH equal to 9. Greater alkalinity than this is also permissible. The amount of alkali added is sufficient to decompose the reversibly-combined sulphurous acid which is present in the liquor in combination with the substances which have been dissolved from the wood. Hence the recovery of sulphur in the form of monosulphite is increased. The solids which are obtained in this manner are then treated in order to convert them into a cooking liquor. This is ac-

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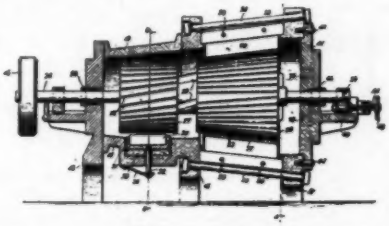
complished by treating the solids with cooking acid which contains free sulphur dioxide, and hence converts the solids into soluble bisulphites. W. E. B. Baker, York Haven, Pa. United States Patent No. 1,685,800. Filed Feb. 25, 1922.

Pulp Refining Engine

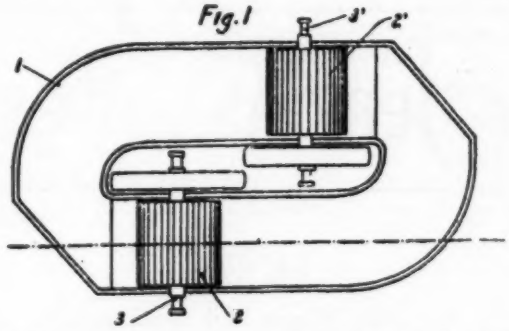
THE engine consists of a casing which is provided with the usual inlet and outlet openings and which contains a number of fiber separating means of different characteristics.



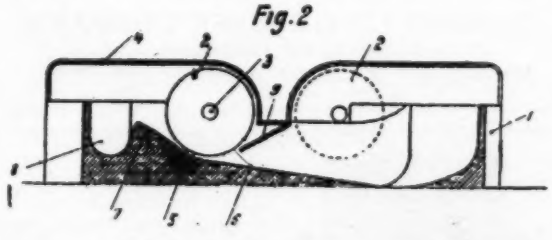
Means are also provided within the casing for feeding the fiber from one separating device to the other. L. A. Thomas, Atlanta, Ga., United States Patent No. 1,674,231.

Improved Pulp Beater

THE improvement in the beater consists of an arrangement which allows the beating action to be effected with considerably less consumption of power than heretofore. At



the same time a pulp of perfect homogeniety is obtained. In the usual type of beater, the front face of the back-fall is curved inwards and it surrounds the roll up to a point near its axis, and in certain apparatus even beyond that point. The result then is that the pulp is subjected to extremely violent friction between the rolls and the back-fall and the energy that is thereby converted into heat is considerable. The

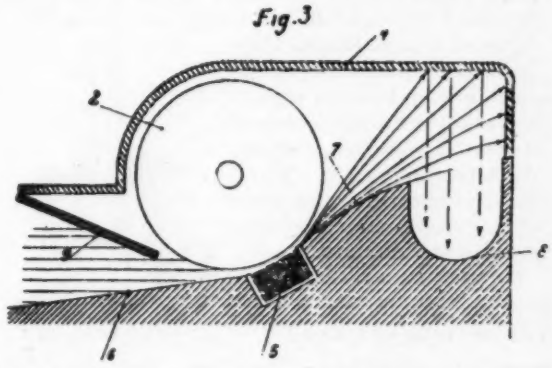


idea is to utilize this energy to better advantage and it is claimed that as much as fifty per cent of this energy can be employed to useful purpose.

According to French Patent No. 637,052, the back-fall is made with almost a plane surface which is lightly convex upwards and the general direction of the surface is at an angle of 45 degrees with the horizontal, tangent to the roll. The surface thus forms the natural prolongation of the bedplate, which is also inclined to the horizontal. The end of the back-fall is located at the level of the axis of the roll or a little lower than this. All frictional action on the pulp between the roll and the back-fall is thus eliminated.

Furthermore, in order to avoid friction and hence economize on power consumption, an inclined plate is arranged within the beater, in front of the beater roll, this plate being movable or not, and is designed to reduce the depth of pulp at this point, which must pass between the lower end of this plate and the bottom of the beater trough. In the ordinary type of beater, the pulp washes against the front of the roll up to a height which is from 16 to 30 inches. The pressure that is exerted against the beater roll upon rotation against this mass of pulp is considerable and results in unnecessary consumption of power. It is claimed that the reduction in power consumption in this case is from thirty to ten per cent according to the amount of pulp contained in the beater.

The new form of beater is illustrated in the accompanying figures. The beater is composed of a trough (1) of any suitable form in which two beater rolls (2) and 2') rotate.



These are provided with knives which act in conjunction with the knives in the bedplate (5), located at the end of an inclined plane (6). The bedplate is located at an angle to the horizontal and is prolonged to form the back-fall (7). The back-fall is slightly convex upwards and its general direction is at an angle of 45 degrees with the horizontal. Due to this arrangement the pulp, immediately after passing over the bedplate (7), is disengaged from the slots on the beater rolls under the influence of centrifugal force and is moved tangentially with respect to the roll at an initial speed which is substantially the same as that of the peripheral speed of the roll itself, that is at the rate of about thirty feet per second. Furthermore, the pulp which is thrown against the cover (4) falls back into the basin (8), which is an indented portion of the trough and which is located right in back of the back-fall (7). This action has the effect of producing a very intimate mixture of the pulp.

The inclined plate (9) is located in front of the beater roll (2) for the reasons that have been stated above. This plate does not have to be used when the beater contains only a little pulp.

This beater is patented by C. G. J. Carchereux, in French Patent No. 637,052.

Bleaching Sulphite Pulp

BLEACHING is characterized by two reactions, oxidation and chlorination. Oxidation is indicated by the attack on the hydroxyl, aldehyde or ketonic groups. Chlorination may be a substitution or an addition. Oxidation reduces the alkalinity of the bleach liquor, while chlorination increases the same. Oxidation is by far the more important reaction. In contradistinction to the low yields obtained in practical operations during bleaching, which are explained mostly as being due to the fiber loss resulting in dehydration, the author found that he could obtain a yield of 99 to 99.4 per cent with an easy bleaching pulp (two per cent active chlorine), obtaining at the same time a good white and in spite of lower copper number and ash contact. The regulation of the concentration of hydroxyl ions at the point suitable under the conditions makes for most favorable bleaching effects.

The author investigated the influence of acid alkaline bleaching baths on the bleaching process, using a well di-

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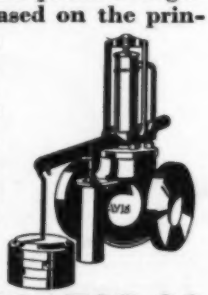

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Fig. 106, screwed Jenkins Standard Bronze Globe Valve.

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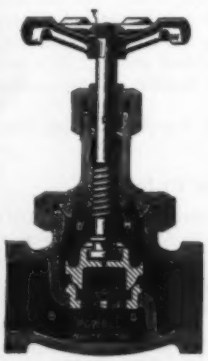

Fig. 102

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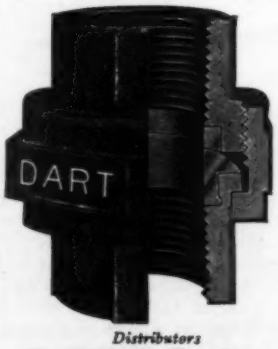

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gested unbleached pulp (complete bleaching being obtained with 7.5 per cent chlorine of lime). The variable hydroxyl ion or hydrogen ion oncentration (pH values from 1 to 13) was produced artificially by the addition of sodium hydroxide or hydrochloric acid solutions. A strongly acid bleaching process consumes a relatively large amount of hydrogen ions and a strongly alkaline process many hydroxyl ions. This is manifested in the fact that a definite tendency in the reactions exists, varying according to the pH values from the start up to a constant pH value of 11 to 11.5 at the end. If the experiment is begun with this pH value, then the alkalinity of the process remains constant clear to the end.

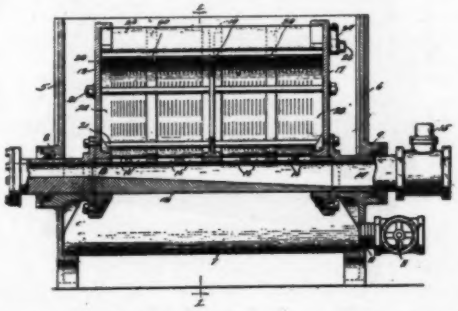
A variation in these constants is probable with varying degrees of digestion of the stock. However, these constants must be established separately in every paper mill, and the bleaching process must be conducted right from the very start in such a manner that equilibrium is established at such a pH number where the process can develop by itself. The old idea that so large quantities of hydrochloric acid are evolved that the process is finished in an acid reaction is consequently no longer tenable, as far as easy bleaching stock is concerned.

Free chlorine is of importance in solution only when the pH value is from 1 to 4. Free hypochlorous acid is of importance only in solutions with a pH value of 1 to 9. In solutions with a pH value of 6 and more there is no other bleaching agent active than the hychlorite ions. The experiments that were carried out with hypochlorites produced the whitest stocks, while free chlorine exerts absolutely no action at all on sulphite cellulose, and hypochlorous acid has the effecting of improving the bleaching action. The hypochlorite ions are therefore the most active components of the bleaching liquor.

The manufacture of stock with low chlorine consumption and possessing a high degree of whiteness must therefore be carried out in practical operations only with alkaline solutions which are allowed to exert their action on the cellulose for a prolonged time, and hence this means in bleaching establishments that have plenty of room. It should, moreover, never be carried out with out strict analytical control. R. Berqvist, Swensk Papp. tidn. volume 30, 686.

Paper and Pulp Screening Machine

THE primary tank (1) of the screening machine has an open top. There is an outlet (10) at the bottom. A chamber (23) is assembled in the tank and this chamber is fixed on



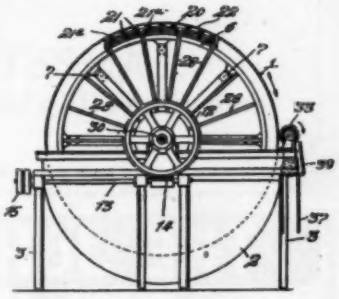
a shaft (12) which is journalled in the walls of the tank. The chamber (23) is provided with circular wall forms containing vertically spaced apart slots in rows adjacent to one another. The chamber is capable of measured reciprocal motion.

Finishing and Coloring Paper

ONLY a part of the required coloring matter is introduced into the beater during the beating of the pulp. The same is true with the sizing material. The rest of the color and the size is applied to the paper web as it advances in the papermaking machine. This takes place after the paper web has been dried but before it has been calendered. The color and the size are applied to the surface of the paper at one and the same time. The mixture used consists of the coloring matter and paraffin-treated tapioca powder. T. Hans, Chicago, Ill., assignor, Container Corpn. of America. United States Patent No. 1,685,917.

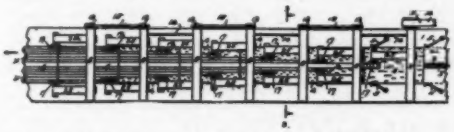
Separating Liquid from Pulp Fibers

THE apparatus which is shown in the accompanying illustration is used for recovering fibers values from liquid mixtures containing them. It consists essentially of a receptacle (2) which contains the liquid from which the pulp fibers are to be separated. A drum (1) extends into the receptacle (2) and this drum is rotated. The drum is provided with a perforated, smooth-surfaced, separating plate (21). The liquid is made to pass through the perforations in the perforated plate and a deposit of pulp is formed on this plate. A brush (33) is rotated against the perforated plate so that the deposited fibers are removed in a continuous sheet. J. H. Hoyt, Hazleton, Pa., assignor, United Filters Corpn., New York, N. Y. U. S. Patent No. 1,685,084. Filed Feb. 1, 1924.



Debarking Pulp Slabs

THE slab is moved axially past a series of rotating cutter heads. Each cutter head is offset from the position of the other cutter heads relatively to the slab. The slab



is properly guided in its motion past the cutter heads. The cutter heads are pressed into the slab and the downward movement of the cutter heads is limited by the height of the wood of the slab under the bark being removed. R. H. Pangborn, Tacoma, Wash. United States Patent No. 1,673,265.

Analytical Difference Between Bleached and Unbleached Mechanical Wood Pulp

A 2.5 gram sample of the mechanical wood pulp (calculated on the dry weight) is weighed out and placed in a flask of 100 cubic centimeters capacity. The sample is covered with a solution of stannous chloride and the flask is covered with filter paper which has been impregnated with lead acetate solution. The contents of the flask are then boiled. If the paper turns black, then one may be sure the tested mechanical wood pulp has been subjected to bleaching with bisulphite. When the contents of the flask are allowed to boil for a long time, until sulphuretted hydrogen is evolved, then the total amount of bisulphite compounds in the mechanical wood pulp can be estimated from the amount of sulphuretted hydrogen evolved. M. Marini, La Papeterie, volume 50, pages 65.

Kraft Pulp and Paper from Pinus Insignis

LABORATORY tests followed by semi-commercial trials indicate that Pinus insignis can be converted into kraft pulp practically equal in quality to Swedish kraft. The best results were obtained by cooking the chips for four hours at a pressure of one hundred pounds per square inch maximum with twenty per cent of active alkali. This is figured in the weight of the dry chips. One third (approximately) of the active alkali is present as sulphide of soda. The optimum ratio of liquor to dry wood was found to be six to one. The use of a proportion of black liquor in the liquor charge is permissible, but has no effect on the yield of pulp. Under these conditions the yield of screened pulp averages 49 per cent (dry pulp on dry wood). Estimated costs of production,

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however, show that under present conditions Pinus insignis kraft pulp could not compete economically with imported pulp. L. R. Benjamin, J. L. Somerville, R. B. Jeffreys and W. E. Cohen, Australian Council Sci. and Ind. Research, 1928, Bulletin 35.

Determining Penetrability of Paper

THE porosity of paper is an essential property of the product for certain uses. It is, therefore, necessary to know just how porous or penetrable a paper may be. The volume of liquid that flows through a definite paper sample is indictated by the formula:—V=P x p/n x S/s. In this formula, p is the pressure differential between two paper surfaces,

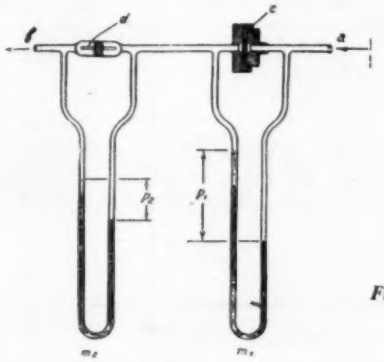


Fig. 1

Fig. 2

S the size of the surface subjected to the liquid medium, s the thickness of the paper and n the viscosity of the liquid medium.

The apparatus used is shown in diagrammatic form in the accompanying illustrations. The capillary tube (see Fig. 1) is (d), whose constants are known. The paper sample is (c). A current of air is produced from (a) to (b) through (c) and (d). The two pressure drops, namely (p_1) through the sheet of paper and (p_2) through the capillary tube are measured on the two manometers (m_1) and (m_2). The porosity or penetrability of the paper is then calculated from these results.

The manner in which the paper sample is made is shown in Fig. 2. The capillary tube is placed within a large glass tube and is fastened by extending it through a stopper, which not only holds the capillary tube but also forms a tight closure against the passage of air. The character of capillary tube used depends on the nature of the paper tested. Nevertheless, a tube of thirteen centimeters length and 0.036 centimeter diameter is suitable for the measurement of all qualities of paper. Luigi Emanueli. Technologie und Chemie der Papier und Zellstoffindustrie, April 28, 1928, pages 49 to 51.

Drum Beater for Making Pulp

THE regular types of beaters are disadvantageous in that they consume large amounts of energy in the beating operation and in that the beating elements work much too regularly to be able to adapt themselves to the different conditions of fibers which have to be beaten. The time of beating is also prolonged.

The new invention consists in placing a series of loose rollers in the direction of the axis of a drum, which rollers exert a frictional action on anything that comes between them during the rotation of the drum. Thus the half-stuff that is filled into the drum is thoroughly mixed together and subjected to frictional action which quickly converts it into a superior quality of pulp. The length, the diameter, the weight and the material of the rollers can all be the same or different, while the drum itself can be provided with different linings. The apparatus can be used for a number of different purposes. It may be employed as a refining engine, as a bleacher and also as a beater.

Figures 1 and 2 show the apparatus. The drum consists of a shell (1) and two end pieces (2). The drum is furnished with two rims (3) which completely encircle the periphery and these rims rest on four rollers (4). The drum is rotated by means of an electric motor (6). The interior of the drum is provided with a basaltic lava lining but this is not necessary and in such cases where the lining is not used, the drum is made of cast iron or cast steel. Rollers (10) and (11) are arranged within the drum, and these rollers may be made of iron, iron covered with bronze, stoneware, basaltic lava, etc. according to the purpose for which the apparatus is going to be used. When the apparatus is employed for beating pulp, then it is loaded in the same manner as the usual type of beater. Water is first added, then the pulp, after which the drum is started rotating at a speed of 10 r.p.m. Later, the sizing materials, colors, fillers, etc. are added in the usual manner.

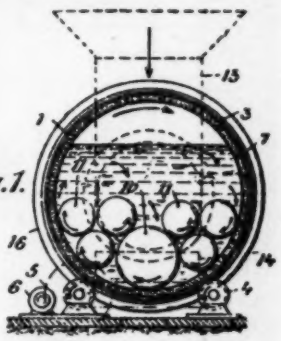


Fig.1.

Various methods may be used in arranging the rollers (10) and (11) within the interior of the drum. One such arrangements is shown in figure 1. The direction of the rotation of these rollers is also indicated in the figure. The rotation of the drum on the one hand and of the rollers on the other hand facilitates the rapid beating of the wood.

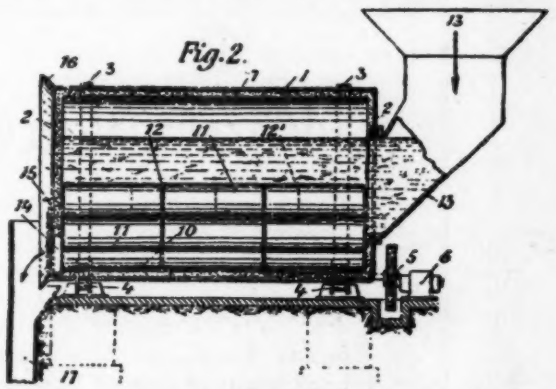


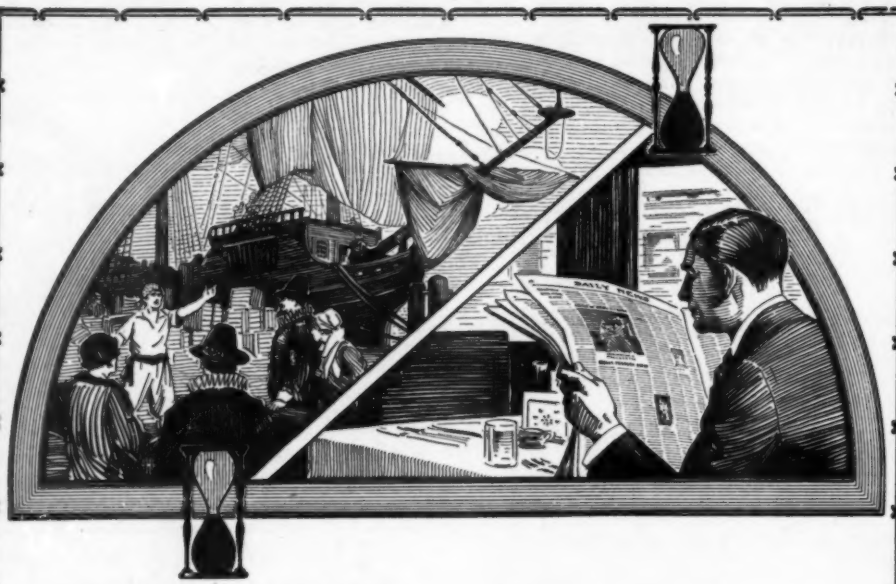
Fig.2.

The funnel (13) shown in figure 2 is used for loading the wood into the drum and the beaten stock is removed through the opening (14). U. Kirchner. French Patent No. 634,672.

Pulp and Fertilizer from Plant Tissues

PLANT tissues are treated in a cooker for the purpose of separating the cellulose from the non-cellulose constituents without impairment of the value of the latter for fertilizing purposes. The raw materials are accordingly subjected to the progressive action of a solution of sodium hydroxide, which is progressively generated in the digester from a mixture of equal parts of sodium carbonate and calcium hydroxide in water, while the mass is maintained at atmospheric pressure. The cellulose that is obtained by this process is suitable for the manufacture of paper while the residual materials are suitable for fertilizer purposes. J. A. Maignen, Philadelphia, Pa. United States Patent No. 1,672,895.

The Gulf States Paper Company has given a contract to the Hill Clutch Machine & Foundry Co., Cleveland, Ohio, for all the agitator equipment and driving mechanisms required in its new kraft mill at Tuscaloosa, Ala. This installation includes 19 vertical tank drives and 6 horizontal stock chest drives.



What News, Traveler?

"What tidings bring you?" was once the common salutation of mankind.

Sailors from foreign ports, messengers from other cities, traders with pack or caravan—these were once the news sources of their day. Was it a calamity of nature that wrecked a city; a plague or famine that devastated a countryside; a change of government; or an oddity of gossip? The wayfarer was almost the only means of disseminating tidings of the event.

Now it is different. Through the ether or over the wires comes the story of the event that is still transpiring. And in a matter of minutes, there goes out on printed sheets of paper the news of its happening.

For in journalism, TODAY is an eternity and is forgotten tomorrow. Only the present moment exists for the reader of the newspaper or the men who have collected and printed that news.

This presentness of living, this attribute of the Fourth Estate, has been made possible by paper—generous in quantity, low in price, and universally available.

HAMMERMILL PAPER CO.

ERIE, PA.

New York, November 1, 1928.

FROM a strictly volume standpoint, there has been marked improvement in the paper industry. Demand for practically every major class of paper has increased in recent weeks, business has come through in a rush in some quarters, and on all sides one hears expressions of gratification over the broadening of the market scope since the usual autumn stimulation of activity set in. It is a fact that most paper and board manufacturers have found it necessary to speed up production to take care of the additional business received, and there is little or no doubt that a large majority of mills now are operating on a larger scale than in some time. Consumers are displaying less hesitancy about buying they are placing orders with a more carefree attitude than in many moons, and bigger requirements have obliged many to operate in the market on a substantially larger scale.

And yet, all is not pleasing to the average paper manufacturer and merchant. Despite the every appreciable increase in the volume of business recently, competition among sellers of paper is just as sharp-edged today as it ever has been, and there are those who are not failing to upturn the proverbial stone in their efforts to corral as much of the business that is available as is possible. The market situation is not altogether to the liking of the producer and distributor of paper and board. While the tonnage in movement into consuming channels is mounting, prices are scarcely budging from the unsatisfactory levels that have prevailed for a considerable while. Some kinds of paper are being marketed at prices which net the manufacturer very little or no profit, and paper is being merchandized in numerous cases on a profit margin which leaves the paper merchant virtually no remuneration. There is no denying that, in a general sense, the industry is in a healthier state at present than in some time, because the widening of demand has given mills more work and the increased production has served in a measure to lower the cost of manufacture on a per ton basis, but it is to be regretted that such keen competition as exists should keep profits accruing to the industry on so narrow a scale.

The outlook for business is bright. Probably never before has the waging of a national poitical campaign had so little direct effect of an adverse character on general business as this fall. Manufacturers, wholesalers, retailers and the ultimate consumer seem to have overlooked the drive of the politicians as a business factor, and general business has gone on climbing, very nearly undisturbed by the political campaign. This would seem to emphasize the fundamental healthy state of business, and now that the election is on the threshhold and soon destined to become a matter of history, it is felt in practically all business quarters that industrial and commercial activity will take a new spurt, and possibly develop to a degree where a period of banner business such as this country has never before witnessed will be enjoyed. That is the sentiment in business circles at present, and there seems every reason to believe that the anticipations of the business fraternity of the nation are to be realized over the next few months.

Production of paper in the United States scored a sharp gain in August as contrasted with the preceding month, totaling 608,852 net tons of all grades, against 532,624 tons produced in July, according to the monthly statistical summary of the industry compiled by the American Paper and Pulp Association. This was an increase of 14 per cent over the July output, and a 4 per cent climb above the June production. The rate of production in August was 83 per cent of capacity, as compared with 78 per cent in July. The August daily average production was 5 per cent higher than July, and 2 per cent in excess of the August, 1927, daily average. Newsprint and felts and building papers were the only individual grades to show a decrease in daily average production as contrasted with July.

The total output of paper in the U. S. during the first eight months of this year was 4,647,805 tons, compared with 4,521,798 tons in the corresponding period last year, an increase of about 3 per cent. Shipments from mills in August amounted to 608,081 tons, which means that manufacturers shipped out virtually every ton they produced in that month, and comparing with 539,796 tons shipped in July. Stocks on hand at mills at the end of August aggregrated 290,514 tons of all grades, against 290,556 tons a month earlier.

A new and lower contract basis on newsprint is indicated for next year. The International Paper Company on October 30 announced that it had made a contract with the Hearst newspapers for a substantial tonnage of newsprint for several years at a price less than its contract prices of 1929, and while details of the new price basis are yet unknown, it is understood on good authority that prices will be considerably below $60 per ton f. o. b. mills, and one report has it as low as $50. The International stated in its announcement that its standard prices will be made known as soon as the necessary details can be completed, and that it will offer substantial price reductions to all of its customers, including those who have already signed their contracts for next year.

It is believed that other newsprint producers will be obliged to cut their prices in the same proportion as the International, and that 1929 will therefore witness a considerably lower contract basis on newsprint. The lower prices are likely to cause newsprint mills in the United States to shut down, it is felt in many parts of the trade, as it is contended only those mills in Canada advantageously situated will be enabled to make a profit at the cheaper market level.

Demand for wrapping paper has been quite brisk. Consumers have been laying in stocks for their busy pre-holiday season, and orders have been received in big tonnage, yet there is a certain element of easiness in kraft paper prices and reports allege that some manufacturers are shading quotations to secure business. Tissue is in good call, and appears to be holding its own quotably. Fine papers are in more demand than in some while, and prices are steady to firm. It is observed that buyers are absorbing mainly the cheaper lines of bonds and ledgers and writings, but the volume of business developing in these papers is distinctly satisfying to manufacturers. Book paper is moving freely into consuming channels and in sizable tonnage, but there are signs of price-cutting in this branch of the trade also which serve to make for a somewhat unsettled quotational basis.

Paper boards are fairly active. There is not the snap to the demand that was observed until recently, but the reserve now shown by buyers is nothing more than a seasonal condition, and most board mills are securing ample orders to warrant operations close to rated capacity, while prices of board are maintained.

February 20 next has been set for the annual banquet of the New York Association of Dealers in Paper Mills' Supplies, Inc., which will be given in the East Ballroom of the Hotel Commodore in New York. The committee, headed by Walter H. Martens, of George W. Millar & Co., Inc., is now busily at work effecting arrangements for the yearly event, and hopes to make this winter's dinner the most enjoyable and largest attended of any which the Association has given in the past.

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The makers of SUPERIOR ROSIN SIZE are ever on guard to investigate and improve the quality and distribution of this product, in order that the paper mills in the United States, Canada, Great Britain and Continental Europe may be afforded the highest quality Size delivered to them as economically and uniformly as possible.

SUPERIOR ROSIN SIZE is truly the most used sizing agent today (here and abroad). It is constantly winning new friends and keeping them.

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Papermaking Rags

In a general way, there has been an increase in demand for many classes of papermaking rags. As usually is the case in the fall of the year, paper manufacturers have evinced better interest and have extended their buying to a sufficient degree to give the market a livelier complexion, and, as regards certain grades of rags, to be creative of a firmer price tone. There is not a great deal of change to report in market values. The alterations noted have been of narrow compass, yet it can be said that nearly all of the revisions recently have been in a higher direction, which can be viewed as a reflection of the improved buying movement on the part of consumers.

Papermakers, however, are not rushing in to acquire supplies of rags. On the contrary they are proceeding in a most orderly manner in covering their wants, and are placing orders for limited amounts of stock; in fact, it can be stated that with rare exception paper mills are purchasing only when actually in need of supplies and are confining their commitments almost entirely to bare requirements. It is true that a few grades are difficult to get in sizable quantities, but there are no visible signs of any serious scarcity or shortage of rags for papermaking. Buyers are managing to get all the supply desired, though in exceptional instances they have to grant a little premium to secure the rags wanted. Imports are falling off, due in large measure to the relatively high markets prevailing in Europe caused by a rising consumption by paper mills there and a decline in collections and production in most Continental countries, which has served to tighten up the supply situation here to some extent—particularly with papermakers manifesting more buying interest, but as stated the supply available continues ample to fill the wants of buyers.

New cuttings especially are exhibiting increased price firmness. Some grades of cuttings are a bit higher, and others display an advancing tendency. Reports say that practically all descriptions, with the possible exception of No. 1 white shirt cuttings, are moving in some direction or another, and dealers are emphasizing the growing scarcity of certain grades. Blue overall cuttings are reported selling at 6.75 cents to slighty higher f.o.b. New York, light silesias at 7.25 to 7.50 cents, No. 1 washables at 4.25 cents, and O. D. khaki cuttings at 5.25 to 5.50 cents, while new unbleached muslins are very firm at 11 cents and more and fancy shirt cuttings are fetching 5.50 to 5.75 cents. White shirt cuttings of No. 1 quality are reported available at 10 cents per pound at shipping points, and perhaps at a little under this price.

Old white cottons are moving in routine channels principally, but at maintained prices, No. 1 repacked whites bringing around 6 cents a pound at dealers' shipping points, and No. 2 repacked to 2.50 3 cents. Repacked thirds and blues are steady quotably at 2.25 to 2.50 cents a pound at dealers' points of shipment, while twos and blues are selling at 2.50 to 2.65 cents, and rough thirds and blues around 1.85 cents per pound. Roofing rags are relatively quiet, according to reports, yet dealers state that these grades are moving fairly freely in some directions, and that certain felt mills are buying in large enough tonnage to absorb practically all the supply reaching the market. It is apparent that consumers are concentrating their purchasing on domestic roofing stock, with the result that domestic supplies are not accumulating in dealers' hands, and as imports of foreign roofing rags have fallen off considerably, the statistical position of the roofing rag market appears to be fairly firm. No. 1 domestic roofing is bringing 1.75 cents or slightly higher per pound f.o.b. New York, and No. 2 domestic 1.35 to 1.40 cents, while foreign dark colored cottons are reported eliciting bids from mills of around 1.60 cents a pound ex dock New York for forward shipments from abroad. A feature in roofing stock is that demand for No. 2 classification is much more active than for No. 1 grade, the explanation being, so it is said, that felt paper mills are using relatively more No. 2 stock.

Foreign rags generally are in limited demand, particularly the better qualities, but prices are well sustained by the firmness of values at primary sources abroad.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

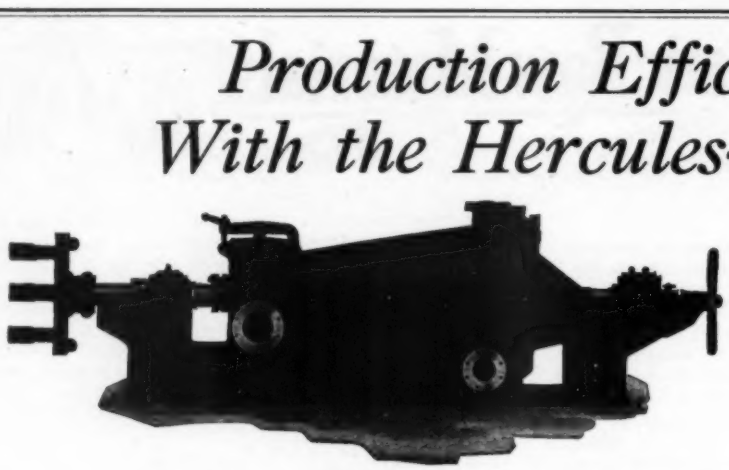
New Stock	New York and Chicago
White shirt cuttings, No. 1	9.75-10.25
White shirt cuttings, No. 2	6.00- 7.00
Fancy shirt cuttings	5.50- 5.75
Washables, No. 1	4.25- 4.50
Unbleached muslin	11.00-11.25
White lawns	9.00- 9.25
Overall cuttings, blue	6.75- 7.00
Black silesias	4.25- 4.50
Light flannelettes	7.75- 8.00
Canton flannels, bleached	9.25- 9.50
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	7.50- 8.00
Shoe cuttings, unbleached	6.00- 6.50
Light silesias	7.25- 7.50
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.25- 3.50
Linens, No. 1, white foreign	13.00-14.00
Light prints foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.50- 5.75
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.25- 2.50
Black stockings	4.10- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.00- 4.50
Roofing, No. 1 (cloth strippings)	1.75- 1.85
Roofing, No. 2	1.35- 1.45
Linsey, garments, foreign	1.80- 1.90
Dark colored cottons, foreign	1.60- 1.65
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Paper manufacturers are buying old rope in a consistent manner, and market prices are well maintained. There apparently is no urgency of demand, and consumers evidently are filling their needs without difficulty, yet dealers assert that practically all the good-quality old rope reaching the market is being moved directly to mills and that there is no accumulation of stock whatever in any corner of the trade. It is said, in fact, that doubtless more rope could be disposed of to mills were the necessary supply available, the contention being that incoming supplies from collection and production sources are far below normal.

Domestic old manila rope of No. 1 grade is selling at 3.75 cents per pound f.o.b. shipping points, and in some instances a little higher is being granted by consumers, while No. 1 foreign old rope is fetching 3.25 to 3.50 cents ex dock New

Production Efficiency With the Hercules-Jordan



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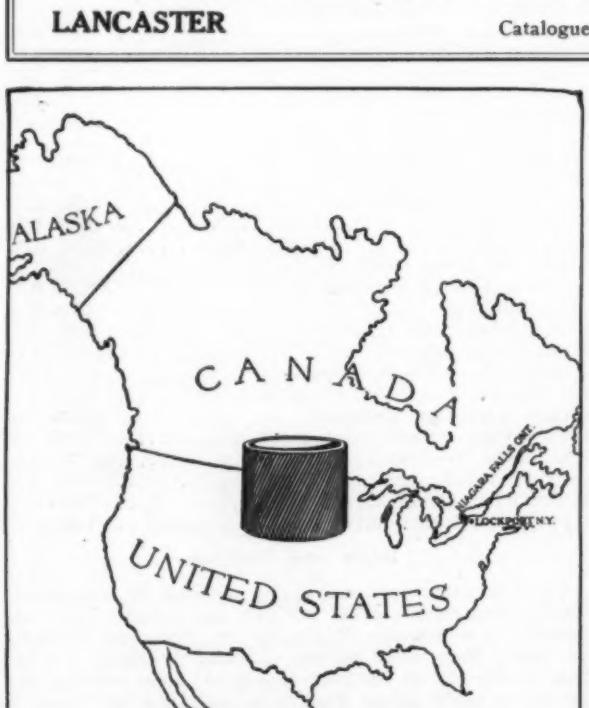

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York. Mixed strings are in fair demand at a price level of from 90 cents per hundred pounds upward, depending on the packing.

Bagging is relatively quiet, since paper mills seem desirous of but small quantities of this raw material. Prices are unchanged quotably at around 1.65 cents a pound f.o.b. shipping points for No. 1 scrap burlap, and 1.30 cents for roofing bagging. Gunny bagging has been in a little better demand but at unaltered prices.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60-1.70
Gunny, No. 1 foreign	1.50-1.60
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.25-1.35
Wool tares, heavy	2.00-2.25
Wool tares, light	1.75-2.00
Manila rope, No. 1 foreign	3.25-3.50
Manila rope, No. 1 domestic	3.75-4.00
Sisal strings	1.50-1.75
Mixed strings	.90-1.10

Old Paper

After advancing to higher levels than have been witnessed in a long time, prices of old paper appear to have about reached the top for the present movement, and in some cases something of a downtrend apparently has set in. The market has exhibited pronounced strength, and the rise in values has been caused by the very healthy condition of broader demand from consuming quarters, coupled with a tightening of supplies at most collection sources. The eastern market led the advance, and the lower qualities particularly scored a sharp rise in a comparatively short space of time, folded news selling at as high as 85 cents per hundred pounds f.o.b. New York, and No. 1 mixed paper at 60 cents New York, with slightly in excess of these rates paid in the Middle West. Generally, it is reported, purchases are now being made at a bit under these price levels.

Consumers have shown pointed interest in extra-quality packing of shavings and have paid 3.10 cents a pound f.o.b. shipping points for No. 1 hard white shavings, and 2.60 cents for No. 1 soft white shavings, with quotations ranging down to 2.90 cents and 2.35 cents, respectively, according to quality. Old books and magazines are firm at 1.35 to 1.50 cents per pound for No. 1 heavy books at dealers' shipping points, and around 1.20 cents for No. 1 crumpled books, while ledger stock is quoted on a range of 1.50 to 1.80 cents a pound, depending on quality. Old kraft paper is bringing 2 cents a pound at shipping points, new kraft cuttings 2.50 to 2.75 cents, and white blank news around 1.70 cents per pound.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.90-3.15
Hard white shavings, No. 2	2.65-2.90
Soft white shavings	2.35-2.60
Colored shavings	1.00-1.25
Heavy book, No. 1	1.35-1.50
Crumpled book, No. 1	1.15-1.25
Ledger stock	1.50-1.80
Kraft, No. 1	1.90-2.10
New kraft cuttings	2.50-2.75
Manilas, No. 1	.90-1.00
White blank news	1.65-1.75
Overissue news, No. 1	.80- .90
Folded news	.75- .85
Sulphite mill wrappings	.80- .90
Old corrugated boxes	.75- .85
New corrugated box cuttings	.85- .95
Mixed paper, No. 1	.55- .65
Common paper	.40- .50

Pulpwood

There is very little stirring in the way of important business in pulpwood at present. The market is experiencing in-between season conditions, demand is at a minimum,

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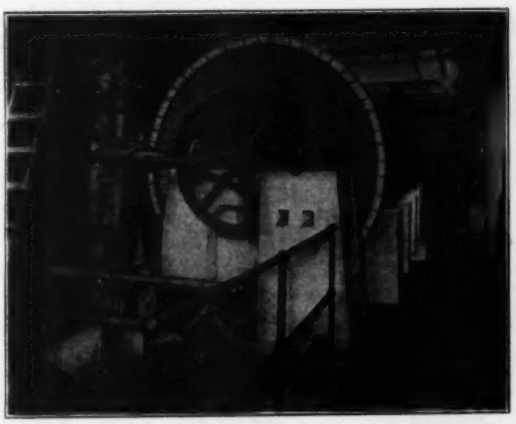

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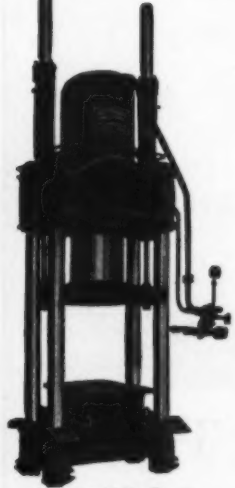

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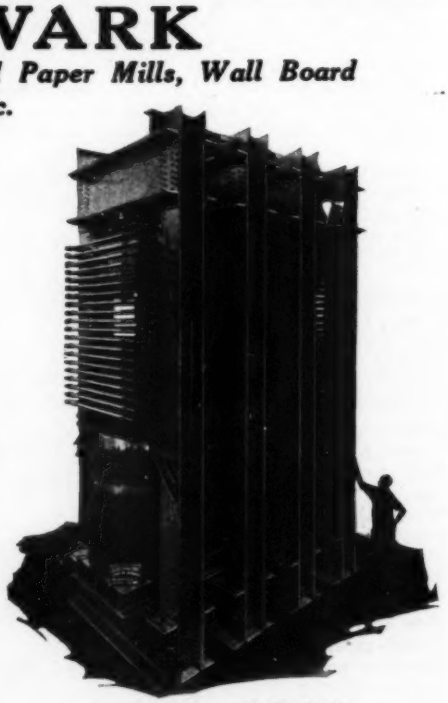

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and prices as quoted are about on last-reported levels and displaying no definite trend.

During the first nine months of 1928 exports of pulpwood from Canada, all of which came to the United States, amounted to 1,285,127 cords, valued at $12,649,787, compared with exports totaling 1,356,164 cords of a value of $13,655,821 in the corresponding period of last year.

Mechanical Pulp

A decidedly better market situation is developing in mechanical wood pulp. There is more demand from consuming quarters, the supply condition appears stronger, and the price tone has stiffened to a degree where higher quotations are named in most producing districts and manufacturers are more insistent on the rates asked than in some while. This improvement in the market was due to come, according to those on the selling side of the trade, who assert that the steady curtailment of production in this country, in Canada and in Scandinavia was bound in time to lead to more favorable prices—from the point of view of the producer. It is declared that ground wood has been selling for a lengthy time at prices below the actual cost of manufacture, which has caused many grinders to reduce their output until what would seem to be the inevitable reaction in the market now is occurring.

Grinders in Canada are reported quoting $26 and $27 per ton f.o.b. pulp mills for prime spruce ground wood, and to be refusing orders for freshly-ground pulp at less than these figures. Domestic ground wood is around a price basis of $27 a ton at producing points, while ground wood imported from the Scandinavian countries is quoted at $32 to $33 per short ton ex dock American Atlantic ports for dry pulp.

Production of ground wood in the United States in August amounted to 75,842 net tons, as compared with 72,667 tons in July, according to the American Paper and Pulp Association. Mill stocks at the end of August were 96,214 tons, showing a considerable decrease from the 110,596 tons held at the end of the preceding month.

Chemical Pulp

Market prices of chemical wood pulp seem to have found their level following the softening of values a couple of months ago, and the undertone at present is substantially steadier than it was and it would appear as if the bottom prices have been witnessed for a time. Reports tell of a fair demand developing, with consumers in many cases having broadened their buying to some extent in recent weeks, and domestic manufacturers are understood to be moderately well booked ahead on orders. There is no great pressure to sell, which of course helps in the maintenance of market values.

Bleached sulphite is particularly firm, and is quoted at 4 cents or higher per pound f.o.b. pulp mills for strictly prime qualities of bleached, though some of the less desirable brands are available at under this price basis. Strong unbleached sulphite of newsprint grade is quoted at 2.50 cents upwards, and No. 1 book sulphite at 2.75 to 3 cents at producing plants. Bleached soda pulp is selling at 3 to 3.25 cents per pound at pulp mills, and No. 1 domestic kraft pulp at 275. to 3 cents

The United States' production of chemical pulps in August amounted to 124,785 net tons, compared with 113,593 tons in the preceding month, according to statistics compiled by the American Paper and Pulp Association. Stocks at producing mills at the end of August totaled 25,486 tons of all grades of chemical pulp, against 24,722 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

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White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Books—	
No. 1 S. & S. C.	5-75- 8.00
Machine finished	5-50- 8.00
English finished	5.50- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.00-15.00
Newsprint—	
Rolls, contract	3.00- 3.25
Rolls, transient	3.25- 3.50
Sheets	3.50- 3.75
Side runs	2.90- 3.15
Cover stock—	
Coated, both sides	-10.25
Coated, one side	-10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.75- .90
No. 1 Manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	5.50- 6.00
No. 2 kraft	4.25- 4.75
Southern kraft	4.25- 4.50
Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	52.50-57.50
Plain chip	40.00-45.00
White coated chip	50.00-55.00
Manila coated chip	50.00-55.00
Binder's board	65.00-70.00

Chemicals

(*Continued from page* 1495)

Most papermaking chemicals are reported moving well, especially on contracts, and current business is developing in fair volume also. Caustic soda is quoted steadily at 2.90 to 3 cents per pound at works for the solid product, and soda ash is firm on a basis of 1.32½ cents a pound f.o.b. works for the 50 per cent light ash packed in bags. Bleaching powder quotations are maintained on a range of 2 to 2.35 cents a pound, in large drums at works. Casein prices are about stationary at around 15.50 cents a pound for the domestic and 16.50 cents for the imported product.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	3.50 - 3.75
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty aid)	15.00 -17.00
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, Grade E	9.20 - 9.30
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	4.07 - ....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities and we will endeavor to furnish actual markets.

Bonds	Bid	Asked
Abitibi Fibre 6s, 1941	104	
Abitibi Power & Paper 5s, 1953	89¾	90
American Sales Book 6s, 1939	102½	104
Advance Bag & Paper 6s, 1952	98	99¼
Bastrop Pulp & Paper 6s, 1940	104½	
Beaver Products 7½s	109	111
Beaverboard 8s, 1933	102	103
Bedford Pulp & Paper 6s, 1942	98	100
Belgo Canadian Paper 6s, 1943	101	102
British Columbia Pulp & Paper 6s, 1950	89	92
Brompton Pulp & Paper 6s, 1935	103	
Brush Moore Paper 6s, 1937	99¾	
Bryant Paper Co. 6s, 1942	100	101
Celotex Co. 6s, 1936		96
Canada Paperboard Co. 7s, 1937	100	103
Central Paper Co. 6½s, 1941	87	89
Central Paper Co. 6s, 1933	87	89
Central Paper Co. 7s	87	
Champion Fibre Co. 6s, 1941	99	100
Champion Paper Co. 6s, 1941	95	98
Champion Coated Paper Co. 6s	102	
Columbia River Paper Mills	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	94½	96
Eastern Mfg. Co. 7s, 1938	99¾	101
Escanaba Paper Co. 6s, 1939	98	100
Filer Fibre 7s, 1937	94	97
Fort Williams Paper Co. 6s, 1946	101	102
Fitchburg Paper Co. 5s, 1929	99	
Glatfelter Paper Co. 6s, 1938	94	96
Hawley Pulp & Paper Co. 6s, 1946	99	
Hoberg Paper & Fibre 7s, 1937	94½	96
Industrial Fibre Co. 8s	100	102
Itasca Paper Co. 6s	99	
Itasca Paper & Prairie River 5½s	100	
Jessup & Moore Paper Co. 6s, 1945	77	80
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Manitoba Paper Co. 6½s	103	105
Mead Fibre Co. 7s, 1937	100	
Munising Paper Co. 6s, 1936	98	
Marathon Paper Mills 5½s, 1942	99	
Marinette & Menominee Paper Co. 7½s	102½	103½
Mead Pulp & Paper 5s	95½	
Mengel Co. 7s, 1934	104	
Mengel Co. 7s, 1933	101	
Minnesota & Ontario Paper Co. 6s	96	98
Missisquoi Pulp & Paper 7s, 1929	99	
Missisquoi Pulp & Paper 6s	98	
Monroe Paper Products Co. 7½s	97	99
Murray Bay Paper Co. 6½s	103½	
Oswego Falls Paper 6s, 1941	98	100
Orono Pulp & Paper 6s, 1943	102	
Orono Pulp & Paper 6s, 1941	97	
Parker Young Co. 6½s, 1944	99	101
Paper & Textile Machinery Co. 7s	100	103
Paterson Parchment 6s	101	102½
Peerless Paper Co. 6s	98	100
Penobscot Chemical Fibre 6s, 1942	102	104
Queen City Paper Co. 7s	97½	
Riordan Pulp & Paper 6s, 1942	102	
River Raisin Paper 6s, 1936	98½	101½
Rolland Paper Co. 6s, 1937	99	101
St. Regis Paper 6s, 1931	100	101
St. Annes Paper Co. 6½s, 1953	103	105
St. Croix Paper Co. 5s, 1928	95	
St. Helens Pulp & Paper 6s, 1941	99	

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Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The Pulp and Paper Trading Co.
21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

The Label

on the Bale

FIDALGO Drying Systems
(Not connected with any Pulp Mfg. Co.)

DRY PULP—
SAME STRENGTH AS WET
SHREDDED OR FIBRE FORM

Bales 250-450 lbs. 40 Cu. Ft. to 2000 lbs.

Higher Machine Speeds.

HIGHER TEST PAPER OR BOARD
CLEAN — COMPACT
SAMPLE TEST SHEET EACH PACKAGE

Let us supply you with data showing result of many tests and cooperate with you to have pulp mills supply in this improved form

TECHNICAL ECONOMIST CORPORATION
Cable: HERENCO 40 Rector St., New York

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

EXPORTS

Exports of paper from the United States during August scored a gain, in point of value, over the preceding month and also over the corresponding month last year, according to the official statistics compiled and issued by the U. S. Department of Commerce in Washington. The total imports of paper of all kinds into this country in August were valued at $2,748,111, compared with imports of a value of $2,519,856 in July this year, and $2,074,319 in August a year ago. Exportations in the first eight months of 1928 amounted in value to $20,543,169, showing a fairly large increase over shipments valued at $18,143,518 in the same time of 1927.

Exports of newsprint paper from the United States in August last were 1,946,680 pounds, of a value of $76,660, contrasted with 2,481,461 pounds of a value of $96,605 in the preceding month, and 2,430,928 pounds of a value of $116,872 in August, 1927. Exports of book paper, not coated, in August amounted to 1,847,522 pounds, valued at $142,496, against 2,046,978 pounds of a value of $146,168 in the preceding month, and representing about twice the shipments of 978,815 pounds of a value of $97,350 in August last year. Wrapping paper exports in August totaled 2,826,538 pounds of a value of $196,603, showing a gain over the 2,129,775 pounds of a value of $151,512 in the same month in 1927, while writing paper shipments increased from 1,254,347 pounds of a value of $174,863 in August last year to 1,938,164 pounds of a value of $203,300 in August this year.

Paper board exports recorded a gain in August, amounting to 3,320,900 pounds of box board of a value of $90,762 and 3,735,238 pounds of other paper board and strawboard of a value of $172,473, against 2,892,883 pounds of a value of $95,842, and 2,818,202 pounds of a value of $149,120, respectively, in the similar month of 1927.

IMPORTS

Wood Pulp

It is reported generally that a livelier market condition has developed in chemical wood pulp. After having pursued a waiting policy for some time, paper and board manufacturers in fairly numerous instances recently have shown more interest and have operated within the market as buyers on a decidedly broader scale, presumably figuring that with the winter drawing near and with it the halting of navigation over the Baltic, it behooved them to cover a part of their forward requirements in pulp. The bulk of the buying has been for first open water shipment from abroad next spring, and some fairly heavy contracting for pulp in this position has been recorded. At the same time, there has been no great rush to buy. Consumers are proceeding in a reserved manner and are not exciting the market in any way by their purchasing, and while prices seem to have steadied on something resembling a stabilized level and exhibit a firmer undertone, there has been little actual change in market values over the last few weeks.

Those on the selling side of the trade are steadfast in their convictions that pulp prices have struck bottom for a time, and that there is very small likelihood of cheaper market levels being witnessed for at least over the winter. It is pointed out that producers in Scandinavia and elsewhere in Europe are moderately well sold for the next few months, and that they will not be eager enough to effect additional sales through the winter to prompt them to reduce prices further. However, there are consumers who feel that lower pulp prices will be seen next year. Prospects are for a much larger production in the scandinavian countries, particularly since there is little or no probability of a strike in the Norwegian or Swedish mills curtailing output, and since new mills are scheduled to go into operation, and the contention is that European producers, in their anxiety to get orders next year, may find it wise or necessary to cut prices a bit more. It is belief on this score that is doubtless causing many consumers in the United States to hold off buying at this season in the volume that usually characterizes their purchases in the early winter.

Imports of pulp into the United States continue on a big scale. Receipts of chemical pulp of all grades during August, according to official U. S. Department of Commerce statistics, totalled 117,717 long tons, valued at $6,891,979, compared with 116,623 tons of a value of $6,769,684 in the preceding month, and constituting the largest single month's imports in any previous month this year with the exception of last January. The August imports brought the total for the first eight months of 1928 up to 829,255 tons of chemical pulp, giving a monthly average of 103,656 tons, and showing an appreciable increase over the monthly average of 98,627 tons imported in the corresponding period of last year. Ground wood imports in August were 15,387 long tons, of a value of $374,476, making a total for the first eight months of the current year of 139,789 tons, contrasted with 127,443 tons in the similar time a year ago.

Bleached sulphite is especially firm in price, and prime bleached is quoted in most cases at 3.90 to 4 cents a pound ex dock New York or other American Atlantic ports. In fact, it is stated that it is doubtful whether strictly prime sulphite could be bought under 3.90 cents. Strong sulphite of prime quality is quoted around 2.65 cents a pound, and prime Swedish kraft pulp at 2.60 cents, with sellers accepting orders for both these grades for shipment from abroad next year at slightly lower figures. Ground wood is displaying a firmer price tone and is quoted at around $32.50 per short ton ex dock New York for dry pulp.

Current market quotations ex dock New York, and receipts at the port of New York during October, 1928, follow:

Bleached sulphite, No. 1	3.85- 4.25
Unbleached sulphite, strong No. 1	2.55- 2.75
Unbleached sulphite, No. 2	2.40- 2.60
Easy bleaching sulphite	2.75- 3.00
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.60- 2.75
Kraft, standard Swedish	2.50- 2.70
Ground wood, per ton (dry)	32.00-33.00

Castle & Overton, 1,400 bls. from Gothenburg, 4,566 Hamburg, 560 Rotterdam, 150 Sundsvall and 320 Oslo; Price & Pierce, 500 bls. from Gothenburg; E. M. Sergeant Co., 1,248 bls. from Gothenburg; Parsons & Whittemore, 450 bls. from Gothenburg; Johaneson, Wales & Sparre, 1,944 bls. from Gothenburg, 750 Wifstavarf and 1,450 Sundsvall; International Acceptance Bank, 1,600 bls. from Oslo and 250 Gothenburg; Atterbury Bros., 2,750 bls. from Oslo; E. J. Keller Co., 1,559 bls. from Hamburg and 400 Oslo; Scandinavian Pulp Agency, 5,842 bls. from Gothenburg, 2,760 Skutskar and 3,625 Wifstavarf; Bulkley, Dunton & Co., 1,750 bls. from Hamburg, 875 Gefle, 900 Wifstavarf, 3,275 Iggesund, 725 Sundsvall, 1,070 Soderhamn, 2,500 Hernosand, 3,887 Stugsund and 1,500 Bremen; Chemical National Bank, 255 bls. from Hamburg, 759 Iggesund and 660 Greaker; J. Andersen & Co., 450 bls. from Stockholm, 7,350 Hernosand, 125 Stugsund, 3,740 Greaker and 300 Gothenburg; Pagel, Horton & Co., 7,000 bls. from Gefle; Brown Bros. & Co., 5,500 bls. from Norrsundet; Perkins-Goodwin Co., 750 bls. from Wifstavarf, 7,700 Obbola, 1,500 Sundsvall and 250 Greaker; Equitable Trust Co., 250 bls. from Gothenburg; M. Gottesman & Co., 875 bls. from Iggesund, 475 Sundsvall, 625 Halmstad and 2,400 Sebenico; American Exchange Irving Trust Co., 3,600 bls. from Hernosand; Woodpulp Service Corp., 125 bls. from

MITTS & MERRILL SHREDDERS

Conveyor or Gravity Feed Shredder

Give Beaters a Lift

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 364 and 365 in the 1928 Paper and Pulp Mill Catalogue

PULP

PERKINS-GOODWIN CO.

Established 1846

551 FIFTH AVENUE, NEW YORK

PAPER

Halmstad; A. P. W. Paper Co., 1,519 tons from Chandler; Order, 800 bls. from Hamburg, 2,346 Wiborg, 6,750 Hernosand, 1,625 Greaker and 155 Bremen.

Paper Stock

The United States imported a total of 293,393,885 pounds of papermaking rags, valued at $5,374,783, in the first eight months of 1928, compared with 250,142,926 pounds of a value of $5,176,412 in the same period of last year. Imports of waste bagging and waste paper in the same time amounted to 101,210,740 pounds, against 63,438,358 pounds a year ago, while imports of old rope and miscellaneous paper stock were 41,453,068 pounds, compared with 43,549,965 pounds last year.

Importations of papermaking materials during October were fairly heavy, with the increased receipts of rags a feature. Arrivals of all grades of paper stock excepting wood pulp at the port of New York in October, 1928, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Brown Bros. & Co., 930 coils and 394 bls.; Panama Railroad Co., 46 bls.; Ellerman's Wilson Line, 229 coils; Cantone & Aquilano, 25 bls.; N. E. Berzen, 45 bls.; Amtorg Trading Co., 190 bls.; International By-Products Co., 144 rolls; W. Schall & Co., 319 bls.; American Exchange Irving Trust Co., 178 bls.; United Fruit Co., 4 bls.; Guaranty Trust Co., 33 bls.; Banca Commerciale Italian Trust Co., 168 bls.; Bank of the Manhattan Co., 77 coils; E. J. Keller Co., 49 bls.; Order, 174 coils and 49 bls.

Old Bagging—Darmstadt, Scott & Courtney, 452 bls.; Warren Mfg. Co., 57 bls.; C. B. Richard & Co., 83 bls.; Lehr Mfg. Co., 142 bls.; Anglo-South American Trust Co., 82 bls.; Katzenstein & Keene, 196 bls.; Bank of the Manhattan Co., 199 bls.; American Exchange Irving Trust Co., 93 bls.; Castle & Overton, 223 bls.; W. Schall & Co., 306 bls.; Guaranty Trust Co., 79 bls.; Victor Galaup, Inc., 44 bls.; Overton & Co., 113 bls.; American Rag Trading Co., 113 bls.; Banca Commerciale Italian Trust Co., 472 bls.; Order, 236 bls.

Rags—Castle & Overton, 306 bls.; S. Birkenstein & Sons, 331 bls.; Darmstadt, Scott & Courtney, 469 bls.; E. Butterworth & Co., 76 bls.; Katzenstein & Keene, 50 bls.; Marquardt-Hewitt Corp., 5 bls.; I. Horowitz, 10 bls.; Robert Bishop Mfg. Co., 179 bls.; J. Cohen & Sons, 46 bls.; J. Reiss & Co., 11 bls.; P. Garvan, Inc., 88 bls.; E. Mayer, 118 bls.; American Waste Co., 65 bls.; Robert Blank, 189 bls.; E. A. Stone Co., 50 bls.; E. J. Keller Co., 534 bls.; American Rag Trading Co., 121 bls.; David Galloway, Inc., 100 bls.; Miltenberg & Co., 35 bls.; Charles Belsky & Co., 53 bls.; Victor Galaup Inc., 36 bls.; Daniel M. Hicks, Inc., 58 bls.; Atlas Waste Mfg. Co., 60 bls.; rench-American Banking Corp., 125 bls.; Bank of Commerce & Trust Co., 44 bls.; C. B. Richard & Co., 87 bls.; American Overocean Corp., 155 bls.; Union Bank & Trust Co. of Philadelphia, 417 bls.; Interstate Trust Co., 312 bls.; Bank of New York & Trust Co., 707 bls.; National City Bank, 457 bls.; Equitable Trust Co., 243 bls.; Guaranty Trust Co., 300 bls.; American Exchange Irving Trust Co., 186 bls.; Banca Commerciale Italian Trust Co., 25 bls.; Philadelphia National Bank, 105 bls.; Chase National Bank, 525 bls.; Chemical National Bank, 450 bls.; State Bank, 45 bls.; Anglo-South American Trust Co., 30 bls.; Logan-Long Co., 138 bls.; J. W. Elswell & Co., 30 bls.; Van Oppen & Co., 23 bls.; Lehr Mfg. Co., 525 bls.; Bank of the Manhattan Co., 466 bls.; Fidelity Trust Co., 227 bls.; Merchants National Bank of Boston, 118 bls.; Bankers Trust Co., 53 bls.; Amtorg Trading Co., 284 bls.; Barrett Co., 403 bls.; Gallagher & Ascher, 154 bls.; J. B. Moors & Co., 9 bls.; Brown Bros. & Co., 116 bls.; American Merchant Lines, 222 bls.; A. C. Fetteroff, 51 bls.; U. S. Forwarding Co., 13 bls.; A. W. Fenton, Inc., 301 bls.; W. Schall & Co., 105 bls.; C. R. Spence & Co., 333 bls.; Order, 2,155 bls.

Miscellaneous Paper Stock—Whaling Waste Products Co., 36 bls.; J. Cohen & Sons, 52 bls.; Victor Galaup, Inc., 248 bls.; Colgate & Co., 21 bls.; Castle & Overton, 17 bls.; Darmstadt, Scott & Courtney, 10 bls.; E. J. Keller Co., 1,217 bls.; Star Woolen Co., 77 bls.; William Steck & Co., 275 bls.; Alexander H. Searle, Inc., 65 bls.; National Sanitary Rag Co., 114 bls.; Paul Berlowitz, 35 bls.; E. Butterworth & Co., 270 bls.; Furness, Withy & Co., 202 bls.; Bank of the Manhattan Co., 147 bls.; National City Bank, 28 bls.; Chase National Bank, 535 bls.; American Exchange Irving Trust Co., 34 bls.; Milton Snedeker Corp., 123 bls.; A. W. Fenton, Inc., 82 bls.; Brown Bros. & Co., 64 bls.; J. B. Moors & Co., 5 bls.; W. Schall & Co., 183 bls.; Order, 1,700 bls.

Paper

Imports of paper into the United States in August, 1928, were of a total value of $12,933,537, showing a fair increase over the imports valued at $12,649,377 in the preceding month, and also over the receipts of a value of $12,578,269 in the similar month last year, according to official U. S. Department of Commerce statistics. Imports during the first eight months of this year were valued at $101,527,868, contrasted with $96,248,452 in the same period a year ago.

Paper imports during October, 1928, held up to a fairly high level, judging from receipts at the port of New York. Arrivals of all kinds of paper through that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Printing—Walker Goulard Plehn Co., 197 bls. from Bremen; Journal of Commerce, 124 reels from Bremen; Martin & Bech-

It's wise to use "A-Syrup size

It takes the fingers of both hands to count the reasons why you should use "A-Syrup" silicate of soda in your beaters.

1. Increased strength of sheet.
2. Better rattle and snap to sheet.
3. Better printing surface.
4. Increased absorption and fixation of colors.
5. Increased retention of loading.
6. Rapid and complete sedimentation of machine water.
7. Flatness of cut sheets of paper.
8. Good working on paper machine.
9. No sticking at the presses.
10. Smaller consumption of felts.

Write us about any one or all ten. Information cheerfully given.

Philadelphia Quartz Company
MAKERS OF SILICATES OF SODA
Philadelphia, Pa.

Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
FIBRE CO.
Canton, N. C.

NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

told, 13 cs. from Bremen; B. F. Drakenfeld & Co., 110 cs. from Liverpool; Titan Shipping Co., 15 cs. from London; F. C. Terpel & Co., 65 reels from Hamburg; P. C. Zuhlke, 140 cs. from Antwerp; Bank of Montreal, 6,630 rolls from Corner Brook; H. Reeve Angel & Co., 58 reels from Wiborg and 65 bls. Gothenburg; Ossian Ray, 258 reels from Gothenburg; Hudson Trading Co., 176 reels from Oslo and 99 rolls Wifstavarf; E. Dietzgen & Co., 21 cs. from Hamburg and 29 cs. Rotterdam; National City Bank, 116 bls. from Hamburg; Keuffel & Esser Co., 352 rolls from Hamburg; Judson Freight Forwarding Co., 53 cs. from Bremen and 17 cs. Antwerp; Guaranty Trust Co., 95 rolls from Gothenburg and 12 rolls Oslo; Perkins-Goodwin Co., 504 reels from Hamburg and 504 reels Bremen; J. J. Bernitz, 58 bls. from Hamburg; Ward Line, 17 bls. from Bremen; Gilman Paper Co., 644 reels from Norrkoping; Brooklyn Times, 74 rolls from Stockholm; Steiner Paper Corp., 15 cs. from Rotterdam; Hoboken Trust Co., 4 cs. from Bremen; M. Price & Son, 96 cs. from Bremen; Order, 3,472 reels, 156 cs. and 369 bls. from Bremen, 189 reels from Wiborg, and 383 reels and 329 bls. from Gothenburg.

Wrapping—Thomas Barrett & Son, 48 bls. from Gothenburg; Blauvelt-Wiley Paper Mfg. Co., 20 bls. from Gothenburg; Gilbert Paper Co., 227 rolls and 30 bls. from Gothenburg; Wilkinson Bros. & Co., 1,048 bls. and 482 rolls from Gothenburg; C. K. MacAlpine & Co., 1,257 rolls from Gothenburg; Ringle Bros., 144 rolls from Gothenburg; J. H. Schroeder Banking Corp., 86 cs. from Hamburg; Birn & Wachenheim, 308 cs. from Antwerp and 5 cs. Hamburg; Steiner Paper Corp., 66 bls. from Oslo and 55 cs. Hamburg; D. S. Walton & Co., 32 bls. from Bremen; Universal Carloading & Distributing Co., 15 cs. from Bremen; E. Dietzgen & Co., 51 cs. from Rotterdam; Robert Wilson Paper Corp., 29 bls. from Rotterdam; Steffen, Jones & Co., 6 cs. from Antwerp; Borregaard Co., 332 bls. and 1,356 reels from Gothenburg; Arkell Safety Bag Co., 440 reels from Gothenburg; International Consumers Paper Corp., 4 bls. from Rotterdam; Insight Paper Co., 426 reels from Oslo.

Cigarette—Standard Products Corp., 522 cs. from Havre; British-American Tobacco Co., 292 cs. from Southampton; P. J. Schweitzer, Inc., 11 cs. from Southampton and 215 cs. from Marseilles; American Tobacco Co., 800 cs. from Bordeaux; DeManduit Paper Corp., 1,324 cs. from St. Nazaire and 557 cs. Havre; Southern Pacific Co., 3 cs. from Havre; Gluckman & Strauch, 6 cs. from Havre; M. Spiegel & Sons, 48 bls. from Genoa.

Writing—Guibont Freres & Co., 33 cs. from Havre; Distinctive Writing Paper Co., 8 cs. from Havre; Stern Bros., 4 cs. from Havre; Winsor & Newton, 2 cs. from London; C. A. Redden, 2 cs. from Havre; American Express Co., 11 cs. from Havre; W. J. Byrnes & Co., 75 cs. from Marseilles.

Drawing—Keuffel & Esser Co., 6 cs. from Southampton, 194 cs. Hamburg and 6 cs. Rotterdam; H. Reeve Angel & Co. 4 cs. from Southampton; Favor, Ruhl & Co., 6 cs. from London; P. Puttmann, 5 cs. from Antwerp; Devoe & Raynolds Co., 9 cs. from Southampton.

Filter—H. Reeve Angel & Co., 104 cs. from Southampton and 11 cs. London; J. Manheimer, 156 bls. from Liverpool; E. Fougera & Co., 62 cs. from Southampton; A. Giese & Son, 53 bls. from Southampton; Happel & McAvoy, 15 cs. from Rotterdam; G. W. Sheldon & Co., 10 cs. from Havre.

Tissue—Uhlmann & Co., 124 bls. from San Juan; F. B. Vandegrift & Co., 15 cs. from Liverpool; Baldwin Universal Co., 5 cs. from Liverpool; Schenkers, Inc., 220 cs. from Hamburg; J. E. Bernard & Co., 3 cs. from Liverpool; B. F. Drakenfeld & Co., 7 cs. from Liverpool.

Hanging—A. C. Dodman Jr., Inc., 11 cs. from Southampton and 60 bls. Liverpool; C. A. Haynes & Co., 57 bls. from London, 39 bls. Liverpool and 28 bls. Southampton; F. J. Emmerich & Co., 18 bls. from Hamburg, 2 cs. Havre, 2 bls. London and 2 bls. Liverpool; Stern, Stiner & Co., 6 bls. from Hamburg; G. J. Hunken & Co., 10 bls. from Bremen; Thomas & Pierson, 2 cs. from Southampton; Order, 8 cs. from Southampton.

Photo—J. H. Schroeder Banking Corp., 257 cs. from Bremen; Globe Shipping Co., 356 cs. from Bremen; Guaranty Trust Co., 4 cs. from Hamburg; P. C. Zuhlke, 216 cs. from Antwerp; P. Puttmann, 31 cs. from Antwerp; Gevaert Co. of America, 411 cs. from Antwerp; J. J. Gavin & Co., 3 cs. from Liverpool.

Board—Coty, Inc., 185 cs. from Havre; Lagerloef Trading Co., 203 bls. from Bremen and 209 reels Hamburg; Chatham & Phenix National Bank, 43 bls. from Gothenburg; American Express Co., 125 cs. from Hamburg; H. H. Ayer, Inc., 9 cs. from Havre; C. K. MacAlpine & Co., 38 bls. from Gothenburg; Bourjois, Inc., 23 cs. from Havre; Cheramy Co., 13 cs. from Havre; D'Orsay Perfumery Co., 42 cs. from Southampton; Hygrade Eagle Corrugated Paper Products Co., 260 reels from Rotterdam; Adrian Vuyck, 595 reels from Rotterdam; Perkins-Goodwin Co., 284 reels from Rotterdam; C. H. Powell & Co., 177 reels from Rotterdam; Grand Corrugated Paper Co., 512 reels from Rotterdam; F. Bing & Co., 8 cs. from Havre; G. M. Thurnauer, 24 cs. from Antwerp; Premier Flong Co., 67 cs. from Hamburg; O. M. Baxter, Inc., 20 cs. from Gothenburg; Order, 18 bls. from Hamburg.

Miscellaneous—Japan Paper Co., 13 cs. from Havre, 2 cs. Bremen, 4 bls. London, 11 cs. Gothenburg and 24 cs. Genoa; Coenca-Morrison Co., 9 cs. from Havre; B. Altman & Co., 7 cs. from Havre; G. W. Sheldon & Co., 29 cs. from Havre, 7 cs. London and 4 cs. Southampton; Hensel, Bruckman & Lorbacher, 56 cs. from Bremen, 10 cs. Hamburg and 5 cs. Rotterdam; F. L. Kraemer & Co., 16 cs. from Bremen and 4 cs. London; S. Gilbert, 104 cs. from Bremen; F. Murray Hill, Inc., 28 cs. from Bremen; Whiting-Patterson Co., 22 cs. from Southampton, 12 cs. London and 13 cs. Rotterdam; J. E. Anderson, 6 cs. from Gothenburg; Brown Bros. & Co., 23 cs. from Hamburg; P. H. Petry & Co., 17 cs. from Hamburg and 12 cs. Bremen; International Forwarding Co., 21 cs. from Hamburg; D. C. Andrews & Co., 9 cs. from Hamburg and 8 cs. Havre; Keller-Dorian Paper Co., 31 cs. from Havre; W. J. Byrnes & Co., 75 cs. from Havre; Globe Shipping Co., 2 cs. from Havre and 224 cs. Rotterdam; Massce Co., 2 cs. from Hamburg; Borden & Riley Paper Co., 7 cs. from Antwerp; Sinclair & Valentine, 4 cs. from Hamburg; Bendix Paper Co., 38 cs. from Hamburg and 6 cs. Bremen; Quality Art Novelty Co., 15 cs. from Hamburg; American Express Co., 32 cs. from Hamburg and 3 cs. Havre; American Exchange Irving Trust Co., 18 cs. from Hamburg; H. D. Catty & Co., 2 cs. from Havre; R. F. Downing & Co., 5 cs. from Havre and 17 cs. Bremen; T. D. Downing Co., 2 cs. from Havre; Cen-

TRADE MARK

B

Registered

DIAMOND B SPLICING TISSUE

HIGHEST QUALITY

SPECIALLY MADE FOR THE PAPER TRADE

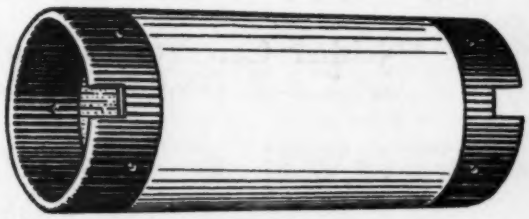
PRICES ON APPLICATION

BEMIS ASSOCIATES INC.

WATERTOWN, MASS.

ELIXMAN PAPER CORE CO., INC.

Corinth, N. Y. U. S. A.



Canadian Elixman Co., Ltd., Hamilton, Ontario

Ham Feltz says:

"Listen youngster, you've got lots to learn in this here paper making business. But put it down as from your old friend Ham Feltz that these here Hamilton Felts having these two long blue lines and this shorter one between is the kind of felts that's going to get rid of the water. They're leaky as the sky in a cloud burst and tough as an elephant's skin. They're Hamilton Felts."

Hamilton Felts

You Will Not Be Disappointed

Our High Quality Fourdrinier Wires are giving the utmost of service, today, in a great many mills. Doubtless you have heard how satisfactorily they are running, and perhaps you are almost convinced that you should use them on your machines. **Why not come to a favorable decision today?** We know you will not be disappointed. On the contrary, we are absolutely certain you will be agreeably surprised with the results you will get. It is our unqualified confidence in our Fourdrinier Wires that impels us to invite you to give them a trial.

Like our wires, our Dandy Rolls and Cylinder Moulds are built for service. They, too, are quality products.

CHENEY BIGELOW WIRE WORKS

Established 1842 **Springfield, Mass.**

You Can't Spell "PERFECTION" Without a "P"

Neither Can You Obtain It Without the Right Type of Roll---Ours Is the Right Type

STOWE & WOODWARD COMPANY

The Rubber Roll Makers

NEWTON UPPER FALLS, MASS., U. S. A.

WET FELTS for TISSUE MACHINES

Free Running and Long Life

THE WATERBURY FELT COMPANY
SKANEATELES FALLS, N. Y.

Felts and Jackets—That Serve and Satisfy

tral Union Trust Co., 39 cs. from Hamburg; Happel & McAvoy, 2 cs. from Havre; C. Montgolfer, 21 cs. from Havre; M. J. Corbett & Co., 3 cs. from Southampton; J. Beckhardt Co., 27 cs. from Rotterdam and 10 cs. Bremen; Meadows, Wye & Co., 36 cs. from Rotterdam; Heemsoth & Basse, 48 bls. from Rotterdam and 4 cs. Liverpool; Dingelstedt & Co., 9 cs. from Bremen; F. Henjes, Jr., 96 bls. from Bremen; Fuchs & Lang Mfg. Co., 3 cs. from Canton; J. W. Hampton Jr. & Co., 3 cs. from London; Whitfield Paper Works, 22 cs. from Kobe; E. Dietzgen & Co., 53 cs. from Hamburg.

Market Quotations

(*Continued from page* 1497)

St. Lawrence Pulp & Lumber Co. 6s	7	
Spruce Falls Power & Paper 5½s	98	100
Stevens & Thompson Paper 6s, 1942	95	97
Southern Advance Bag & Paper 6s, 1947	94	96
Smith (Howard) Paper 6½s, 1941	103	
Smith (Howard) Paper 5½s, 1953	94	96
Taggart Bros. 6s, 1941	95	100
Tait Paper & Color Industries 6s	88	90
Ticonderoga Pulp & Paper 6s, 1940	100	102
Ticonderoga Pulp & Paper 5s, 1930	96	98
Tonawanda Paper Co. 5½s	100	102
United Wall Paper 6s, 1947	96	98
Watab Paper Company 6½s, 1942	102½	104
Whitaker Paper Co. 7s, 1938	108	109
Warren (S. D.) 6s, 1945	104	105
Westfield River Paper Co. 7s	88	90
Wm. Whitmer Parsons Pulp & Lumber Co. Cons. 8s	22	25
Waterway Paper Products 6s	101	
Stocks		
American Book Co. Common	135	139
American Sales Book Common	90	91
American Sales Book Pfd.	111½	112½
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Pfd.	90	
Brown Co. Pfd.	95	97
Bryant Paper Co. Common	7	10
Beigo Canadian Paper Co. Pfd.	104	106
British Columbia Pulp & Paper Common	7	9
British Columbia Pulp & Paper Pfd.	70	
Canada Paperboard Co. Pfd.	90	94
Champion Fibre Co. Pfd.	107	
Champion Coated Paper Co. Pfd.	105	107
Chemical Paper Co. 1st Pfd.	90	
De Jonge (Louis) Pfd.	95½	96½
Dryden Paper Co. Pfd.	38	41
Diem & Wing Pfd.	92	95
Downington Paper Co. Pfd.	103	
Downington Paper Co. Common	93	
Eddy Paper Co. Common	30	
Escanaba Paper Co. "B" Pfd.	42	
Escanaba Paper Co. Common	3	
Glatfelter Paper Common	101	
Great Northern Paper Co. Common	75½	76½
Gair (Robt.) Co. Preferred	39½	40
Gair (Robt.) Common	10	13
Hawley Paper Co. Pfd.	96	
Hammermill Paper Co. Pfd.	109	110½
Holyoke Card & Paper Co. Pfd.	170	
Hinde & Dausch Paper Co. Pfd.	101	103
Hinde & Dausch Paper Co. Common	23	24
International Pulp Co. Pfd.	75	
International Textbook Co.	18	22
Jessup & Moore Paper 1st Pfd.	27	31
Jessup & Moore Paper Common	4	10
Keyes Fibre Co. Common "A"	43	45
Marathon Paper Mills Common	125	
Marathon Paper Mills Pfd.	170	
Mead Pulp & Paper Co. Common	68	72
Minnesota & Ontario Paper Co. Pfd.	70	75
Missisquoi Pulp & Paper Pfd.	90	95
Munising Paper Co. Common	22	25
Munising Paper Co. Pfd.	83	87
Northern Paper Mills	30	32
National Paper & Type Pfd.	75	80
Orono Pulp & Paper Common	40	45
Oglesby Paper Co. Pfd.	101	
Occident Paper Co. Pfd.		15
Oxford Paper Co. Pfd.	109½	110½
Oxford Paper Co. Common	185	190
Parker Young Pfd.	89	92
Parker Young Common	25	
Penobscot Chemical Fibre Common	80	
Package Paper & Supply Units	22	
Robertson Paper Co. Pfd.	5	
Robertson Paper Co. Common	50c	
River Raisin Paper Co.	8	10
Rogers Paper Co. Common	45	50
St. Regis Paper Pfd.	104	106
St. Croix Paper Co. Common	168	
Sutherland Paper Co. Common	24	28
Tait Paper & Color Industries Pfd.		90
Tait Paper & Color Industries Common		70
United Wall Paper Pfd.	90	95
United Paperboard Co. Pfd.	63	
West Virginia Pulp & Paper Pfd.	101	103
West Virginia Pulp & Paper Common	53½	55
West Virginia Timber Co. Pfd.	90	94
Westfield River Paper Co. Pfd.	85	95

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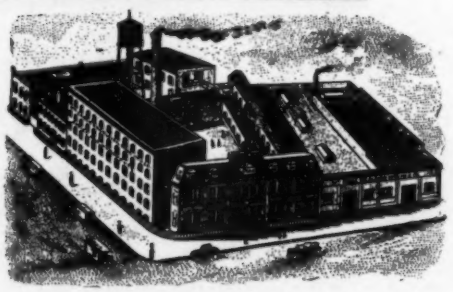

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No. 33491—Cardboard milk bottle caps. Rosario, Argentina. Purchase desired.

No. 33459—Fiberboard. Laminated, for manufacture of suitcases, shipping cases and boxes. Guaymas, Mexico. Purchase desired.

No. 33490—Fiberboard, vulcanized and corrugated, and strawboard. Port Elizabeth, South Africa. Agency desired.

No. 33489—Map and chart paper, white. Santiago, Cuba. Purchase desired.

No. 33438—Napkins, sanitary plates and cups, and toilet paper. Conception, Chile. Agency desired.

No. 33457—Roofing felts. Hamburg, Germany. Agency desired.

No. 33618—Cardboard, boxboard, and wrapping and packing paper. London, England. Agency desired.

No. 33678—Cardboard containers for ice cream. Rosario, Argentina. Purchase desired.

No. 33619—Paper of all kinds. Lima, Peru. Agency desired.

No. 33774—Fiberboard. Birmingham, England. Agency desired.

No. 33788—Newspapers, overissued. Amoy, China. Purchase desired.

No. 33707—Writing, bond and ledger paper, and cards and blanks. Winnipeg, Canada. Agency desired.

No. 33837—Waterproof paper for shoe lining. Erfurt, Germany. Purchase and agency desired.

No. 33934—Parchment, for lamp shades. Toronto, Canada. Purchase desired.

No. 33840—Roofing paper. Auckland, New Zealand. Agency desired.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The Paper Industry, published monthly at Chicago, Illinois, for October 1, 1928.

State of Illinois, County of Kane, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward B. Fritz, who, having been duly sworn according to law, deposes and says that he is the publisher of The Paper Industry and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.; Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Managing Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Business Managers, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two pararaphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

EDWARD B. FRITZ,
(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 24th day of September, 1928.

[SEAL] W. B. LATHROP, Notary Public.
(My commission expires July 11, 1930.)

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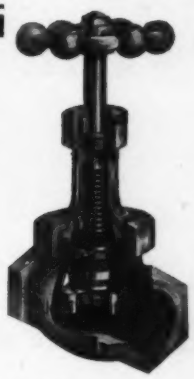

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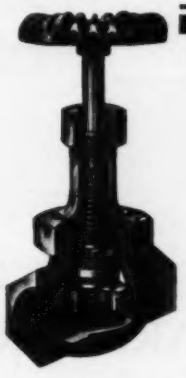

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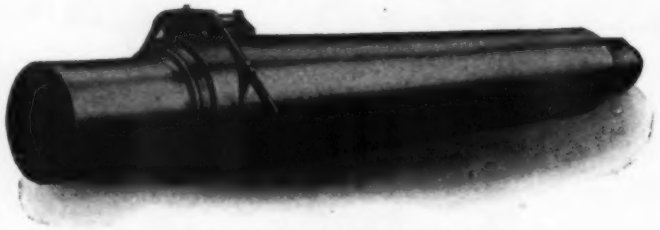

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